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Mac FORMAT

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+ M2 Mac Studio & Mac Pro

Hands-on headset review!

The incredible new

Vision Pro

Meet the world's first spatial computer

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For months, rumours circulated that this year's Worldwide Developers Conference would be one of Apple's biggest – and so it proved to be. Not only did the company unveil brand new versions of its major operating systems – step forward macOS Sonoma, iOS 17, iPadOS 17 and watchOS 10 – but it also had a few hardware surprises up its sleeve.

Of these, the most popular is likely to be the new MacBook Air. Now available with a 15.3-inch Liquid Retina display, it finally puts Apple's big screen laptops back within reach of the rest of us – which is fantastic news given that the 16-inch MacBook Pro has become increasingly expensive over the last few years.

The new MBA was joined by two more 'pro' machines: the Mac Studio, which is now available with either M2 Max or M2 Ultra Apple silicon; and the M2 Ultra-sporting Mac Pro, which finally pulls down the shutters on the Intel era.

They were followed by One More Thing... a mixed reality headset named the Vision Pro that combines all of Apple's hardware and software know-how into an incredible new device that brings Apple into the 'spatial computing' arena.

You can find out all about these and lots of other exciting developments starting on p6; with tips and guides to help you make the most of your existing devices starting on p35.

ROB MEAD-GREEN
EDITOR
editor@macformat.com

Rob

Meet the team

Jo Membery
Operations Editor
› Jo's 'augmenting reality' by strapping her iPhone to a diving mask. No wonder she's getting such strange looks on her journey into work on the bus.

Paul Blachford
Art Editor
› Paul's building a scale model of Apple Park HQ using 'leftover' materials, which mainly seem to be half-eaten sausage rolls from the office bin.

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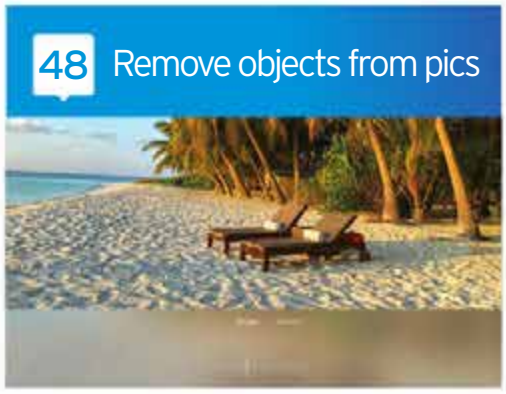

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APPLE CORE

EDITED BY **ROB MEAD-GREEN**

HOT TOPIC!

Apple reveals its vision of the future

From new Macs to the world's first 'spatial computer'

There was speculation before Apple's Worldwide Developers Conference (WWDC) that this year's event could be the biggest in years, and so it proved to be. In a jam-packed show, Apple revealed an enormous range of new products, from updated Macs and a ground-breaking mixed reality headset, dubbed the Vision Pro, to major updates of the company's operating systems as well an all-new one: visionOS.

But it was the Vision Pro that generated the biggest buzz. Combing augmented reality (AR) and virtual reality (AR) experiences in a single device, it marks Apple's first major new entry into a product category since it introduced the Apple Watch in 2014 and could yet usher in an era of what Apple calls 'spatial computing'. Its demo showed the headset being put to all kinds of uses – from 3D photo and video recording to movie viewing, gaming and productivity with truly stunning results.

There are some caveats though: not only will you have to contend with its two-hour battery life while using it, there's also the small matter of availability and cost. The Vision Pro might not put a "dent in the universe" (as Steve Jobs once said), but it'll definitely put one in your wallet: the Vision Pro will cost $3,499 when it launches in the US next year, while a UK launch is unlikely before 2025.

Aside from the long-awaited headset, Apple also revealed its first 15-inch MacBook Air, M2 Max and M2 Ultra-equipped Mac Studio models, an all-new Mac Pro and lots more. You'll be able to find out about all these exciting developments over the next 20 pages.

The MacBook Air now comes with a delicious 15.3-inch Liquid Retina display.

MacBook Air gets a bigger canvas

15-inch model joins existing 13-inch Air and costs from just £1,399

The world's biggest-selling laptop is now available in a whole new size with Apple revealing the MacBook Air 15-inch at its Worldwide Developers Conference in June.

While rumours before the event made all kind of rash claims about what a new MacBook Air might contain (M2 Pro, anyone?) in the end everyone got exactly what they were probably expecting, which is a MacBook Air 13-inch. But bigger.

Luckily, the MacBook Air is the world's biggest seller for a reason – and those reasons persist in the 15-inch model.

The MacBook Air 15in has a six-speaker sound system with Spatial Audio

That means you get an Apple silicon M2 chip with an 8-core CPU, 10-core GPU and up to 24GB of unified memory. Plus, a range of super-fast solid-state storage options ranging from a 256GB SSD to a range-topping 2TB version.

A bigger display

Just like on MacBook Air 13-inch, the 15-inch is available in a fanless aluminium design in four striking colours (Midnight, Starlight, Space Grey and Silver) but now has the added advantage of a 15.3-inch Liquid Retina display with a resolution of 2880x1864 pixels versus the 13-inch version's 2560x1664 pixel 13.6-inch panel. it also has a six-speaker sound system with immersive Spatial Audio, while the MacBook Air 13-inch has a four-speaker array. It also a little heavier at 1.51kg vs the MacBook Air 13-inch's 1.24kg weight.

The latest MacBook Air comes with MagSafe 3 charging and two Thunderbolt/USB 4 ports.

Otherwise the usual superlatives apply, with the MacBook Air 15-inch offering both Wi-Fi 6 and Bluetooth 5.3 wireless connectivity as well as MagSafe 3, two Thunderbolt/USB 4 port and a 3.5mm headphone jack, plus a 1080p FaceTime camera for video chats with friends and family.

The new MacBook Air 15-inch is available now with prices starting at £1,399 for a version equipped with a 256GB SSD, rising to £1,599 for the step-up model with 512GB of storage. The M2 MacBook Air 13-inch remains available at £1,149 to start, as does the M1 MacBook Air which costs £999.

MacBook Air 15-inch

M2 chip

8-Core CPU

10-Core GPU

Six-speaker sound system

1080p camera

Up to 18 hours battery life

Up to 24GB memory

Up to 2TB storage

Image credit: Apple Inc

The $3,499 Vision Pro is the first Apple product you look through, not just at.

The incredible new Vision Pro

Meet the world's first spatial computer! Plus: hands-on review

Even though it's been rumoured for months, Apple's biggest reveal at the Worldwide Developer Conference (WWDC) was also its most surprising. That's how good its Vision Pro mixed reality headset is.

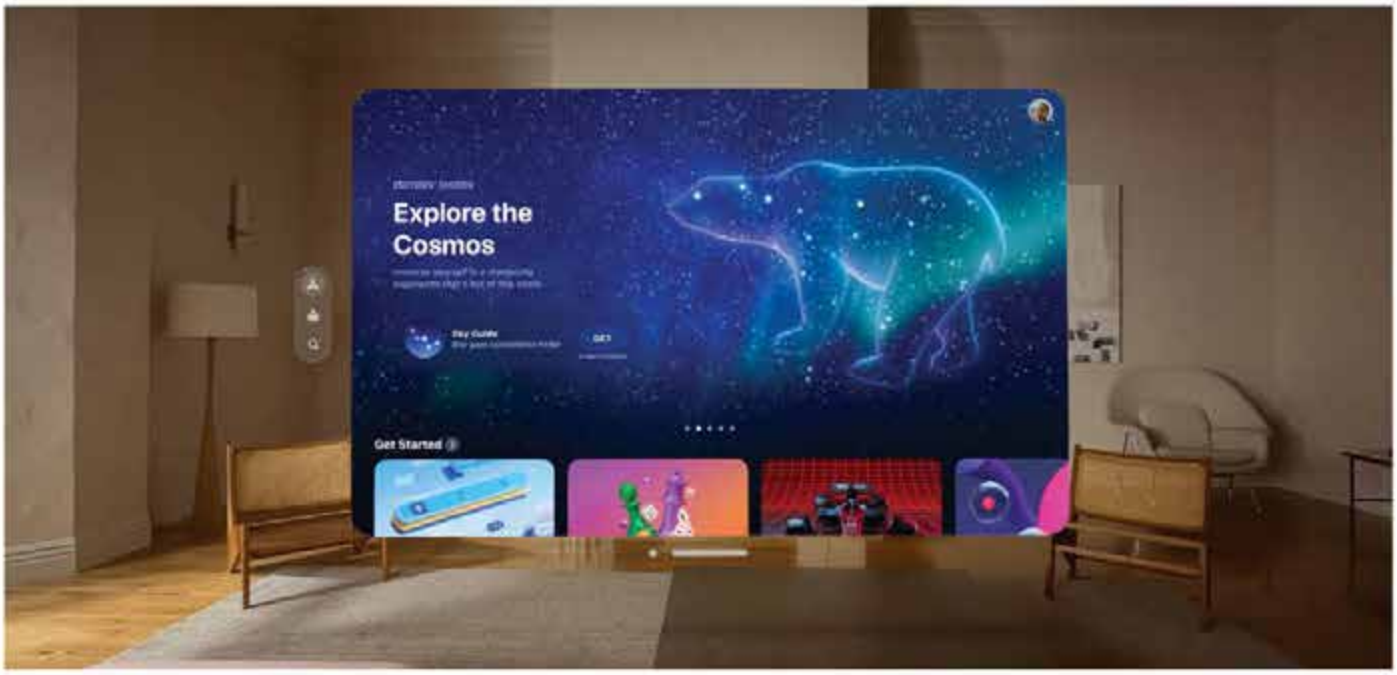
Reserved for a 'One More Thing' moment in the second half of the opening keynote, the Vision Pro builds on the augmented reality (AR) and virtual reality (VR) expertise Apple has been developing for the last few years and turned it into a single product: a head-mounted computer that enables you to use looks, gestures and voice controls to not only control the interface, but also to interact with the world around you. As Tim Cook put it during his keynote: "The Vision Pro is the first Apple product you look through, and not at." What's surprising is just how accomplished, and ground-breaking the Vision Pro feels.

The Vision Pro uses built-in cameras to project a version of your face through the visor – and it's a bit spooky.

The Vision Pro is certainly complex, comprising two 4K micro-OLED displays (one for each eye) mounted on a curved piece of opaque class around which sit 12 high resolution cameras, six microphones, five sensors, and a curved logic board (see 'Brain Power', a Spatial Audio sound system and more – all wrapped up in a super-slim, aluminium frame.

Brain power

The Vision Pro's extraordinary power just wouldn't be possible without a couple of key Apple technologies: the Apple silicon M2 and new R1 chip. The M2, of course, is the same chip Apple uses in the latest Macs and iPads, and runs visionOS – Apple's first 3D operating system. That ensures that the Vision Pro can access thousands of existing apps in the Apple ecosystem, but also works with the R1 – the chip that powers the Vision Pro's cameras, sensors and microphones in real time.



Apps and their windows float magically in front of you – and you control them using a combination of looks, gestures and voice commands.

Image credit: Apple Inc

Vision Pro in detail

Light Seal
Made from soft textiles, the Light Seal comes in a range of shapes and sizes to ensure it conforms to your face.

Headset
With dual 4K displays, a logic board, cameras and sensors, the Vision Pro is a highly complex piece of kit.

Reality check

The final piece of the puzzle is the Vision Pro's Digital Crown. Like an oversized version of the one found on the Apple Watch, the Digital Crown enables you to adjust the level of immersion offered by the Vision Pro – enabling you to switch between augmented reality (where you can see the real world overlaid with the 3D visionOS interface and the apps you're using) to full virtual reality where the outside world fades away – for more info, see 'Our first impressions' on the right.

During its presentation, Apple showed off all kinds of use cases – from productivity to gaming to FaceTime calls (where visionOS creates an uncanny valley-like Digital Persona of you), to 3D photo and video recording – adding a whole new sense of 'being there' to your most precious memories.

As exciting as this sounds, Apple faces the same obstacle as other VR headset makers when it comes to selling its spatial computer: convincing us that strapping one to your face really is the future.

You can easily switch between augmented reality and full virtual reality with a twist of the Digital Crown.

Head Band
Available in multiple sizes for the perfect fit, the Head Band includes a simple release mechanism.

Battery pack
The Vision Pro's two-hour battery pack attaches to the headset using MagSafe and is slim enough to slip into a pocket.

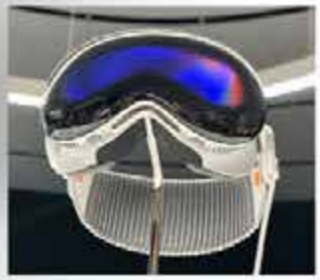
The Head Band is made from cushioned, breathable 3D knitted material and is easily adjustable too.

Our first impressions

Apple's Vision Pro is easily the best piece of VR hardware I've ever worn, yet it still might fail. The key to tech success is not innovation alone. It needs to be: 1) attainable; 2) easy to use; 3) make sense to the average person; 4) have a purpose or solve a problem; and 5) innovate on what already exists.

The Vision Pro wins on innovation. There has never been a mixed-reality headset like it. It takes the state of the art in AR and VR and, with a mix of bleeding-edge components and a surprisingly well-thought-out software platform, pushes it to new frontiers. It's rare to find new, cutting-edge technology that works as effortlessly as the Vision Pro.

It wins on ease of use for the same reason. Thanks to an excellent gesture and gaze-driven interface, there is no mind-bending learning curve, just the reality curve of AR and VR experiences.



A Vision Pro on display at Apple's Worldwide Developers Conference.

Not everyone 'gets' mixed reality but I think Apple did an admirable job on making it understandable by not digging too deep into the technology and putting the headgear in context.

Three out of five is pretty good, and if owning the coolest thing around were a benchmark for success, the Vision Pro will be a blockbuster. However, we don't live in a world where any VR headset could be considered iPhone-level successful. VR and mixed reality has generally failed in the consumer space because it doesn't actually solve a problem.

Let's put it this way: you drive a car because you can't travel long distances in a reasonable amount of time without it. You wear glasses or contact lenses because you can't see without them. You have an Apple Watch because, first and foremost, you want the time on your wrist. You carry an iPhone to stay connected and communicate with anyone in the world. What will compel you to use the Vision Pro?

The real world may be a harsh place but most of us still prefer it over living and working in a virtual one. Apple, to its credit, didn't pitch an 'Appleverse' to go along with its Vision Pro but that also means that there's no reason to plonk down $3,499. Instead, it offers a collection of experiences and possibilities that improve what you do in the real world: watch big-screen movies, extend your desktop to all corners or your home office, and conduct FaceTime calls.

As for attainability, the Vision Pro is currently unattainable, and even when it ships, $3,499 will be cost-prohibitive for many. Customers will be asking "Why do I really need it?" I still want one, though. **Lance Ulanoff**

Image credit: Apple Inc

The new expansive Mac Pro

Cupertino completes Apple silicon switch

The MacBook Air wasn't the only Mac to get a makeover at Apple's Worldwide Developer Conference (WWDC), so too did the Mac Studio (see bottom right of page) and the Mac Pro – the last holdout of the Intel era. Interestingly, Apple hasn't seen fit to give its most expensive Mac a complete makeover. Instead it retains almost of the features beloved by pros in the previous generation, but then adds several delicious new ones to the mix.

The new M2 Ultra

Now available in the new Mac Pro and Mac Studio, the Apple silicon M2 Ultra is the logical next-step for Apple's 'pro' machines. Like the M1 Ultra before it, the M2 Ultra uses Apple's combines UltraFusion technology to marry two M2 Max chips together, giving it a total of 134 billion transistors – that's 20 billion more than in the M1 Ultra found in the first-gen Mac Studio. While the M2 Ultra is built using a 5nm process, even more powerful and efficient chips could be on the cards, with Apple switching to 4nm and then 3nm in the near future.

The chief of these, of course, is the Apple silicon M2 Ultra (see bottom left) – the most powerful chip ever to be fitted in the Mac since Apple made the switch away from Intel in November 2021.

Comprising a 24-core CPU, 60- or 76-core GPU and a 32-core Neural Engine, the M2 Ultra can also support up to 192GB of unified memory and has a memory bandwidth of 800GB/sec. That's enough, Apple says, to make the new Mac Pro between to seven times faster than the last of the Intel Xeon-era Mac Pro models, which started out with an 8-core CPU and could be configured upwards from there. It's also capable of handling up to 22 8K ProRes video streams simultaneously.

Room for expansion

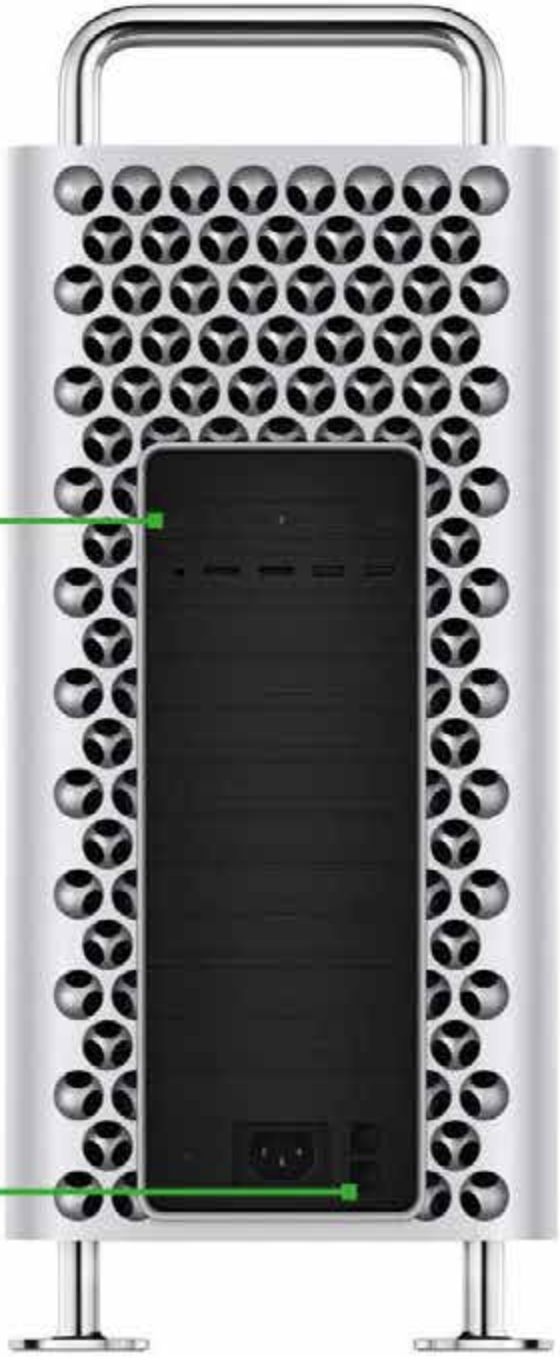
Apple says the graphics power of the GPU inside the M2 Ultra is equivalent to seven Afterburner cards, but it hasn't neglected the need for expansion either. The Mac Pro can be fitted with up to 8TB of storage, plus it also includes seven PCIe expansion slots (six with support for Gen 4) for add-on video cards and the like.

The new Mac Pro also comes with eight Thunderbolt/USB 4 ports – six on the back and two on the top, double the number that it had before. These enable a single Mac Pro to directly support up to six Pro Display XDRs, while the inclusion of two HDMI ports (capable of 8K video at 240Hz) takes the total number of supported displays to eight. The Mac Pro also includes two 10Gb Ethernet ports, two USB-A ports and a headphone jack.

Apple silicon M2 Ultra SoC
Apple's most powerful chip comes with 24 CPU cores, a choice of 60 or 76 graphics cores, plus a 32-core Neural Engine.

You can also now choose between Mac Pro tower and rack mount cases.

Naturally, the build-to-order options are expansive. Prices for a 'base' model Mac Pro start at £7,199 for an M2 Ultra model equipped with a 24-core CPU / 60-core GPU, 64GB of unified memory and 1TB of storage. A fully-kitted out Mac Pro with a 24-core CPU, 76-core GPU, 192GB of memory and 8TB of storage will set you back £11,999. Adding wheels instead of feet costs an extra £400. The rack mount options start at £7,699.



Expansion ports

The new Mac Pro has eight Thunderbolt/USB 4 ports, plus two HDMI ports, two USB-A ports and a high impedance headphone jack.

Expansion slots

The Mac Pro has seven PCIe expansion slots, six of which support the latest Gen 4 standard, which is 2x faster than Gen 3.

10Gb Ethernet

You'll find two 10Gb Ethernet ports on the back of the new Mac Pro, It also has Bluetooth 5.3 and Wi-Fi 6E (802.11ax) wireless connectivity.

While the new Mac Pro is undoubtedly powerful, it doesn't push the Mac much further forward in terms of design. Perhaps that's no bad thing. After Apple's failed experiment with the 'trash can' era Mac Pro, a tried-and-tested tower/rack mount case makes sense in its most 'pro' machine, especially given its expandability and flexibility that pro users tend to value most. But with M3 Macs rumoured to be arriving later this year, it'll be interesting to see what Apple does next.

Mac Studio goes M2 too

Despite rumours which suggested that last year's Mac Studio was a one-off, Apple unveiled an updated version at WWDC. The line-up now starts at £2,099 (a £200 increase) for a Mac Studio equipped with a 12-core CPU/30-core GPU M2 Max; while the step-up model gets a 24-core CPU/60-core GPU M2 Ultra chip for £4,199 (also £200 more). Both models promise a sizeable uplift in performance and offer plenty of upgrade options.

The Mac Studio is available with either M2 Max or M2 Ultra chips.

Image credit: Apple Inc

MATT BOLTON...

THINKS EYESIGHT IS THE SMARTEST PART OF A VERY SMART NEW HEADSET, BUT IT'LL BE MADE FUN OF

The Apple Vision Pro headset is absolutely crammed with clever tech. In classic Apple style, very little of it is brand new tech we haven't seen before on some prototype or niche headset that was dead on arrival, but Apple's been able to bring it all together into something that feels complete.

There is one thing I haven't seen before though: EyeSight. This is the screen on the outside of the Vision Pro that basically shows a recreation of your eyes inside the headset. It is weird, it is kind of dystopian in its general vibe, and it's also a brilliant solution to a genuine problem.

Long-time readers may remember that I've written here before about "affordances". In software, these are elements that let people know that something can be interacted with. A mouse pointer that turns into a pointing finger over a link is an affordance. The insertion point that flashes in text so you can see it is an affordance. A scrolling list that bounces when you reach the bottom so you know you've hit the end is an affordance.

> EyeSight is an affordance that mixes software and physical cues

These can come into real life too – I believe that the stick design of the AirPods is a valuable affordance, because it makes them more visible, so people are more likely to realise that you can't hear them, stopping them from becoming embarrassed in the event of attempting to talk to you.

EyeSight is an affordance that mixes software and physical cues. The wags will point out that it creates a kind of uncanny valley situation, making it look kind of horrific. And they're not wrong... but the benefits vastly outweigh the silliness for me.

The simplest set of affordances in EyeSight are the way it clouds your 'eyes' depending on what your visibility inside the headset is – if I can't see your eyes, you can't see me. If I can see your eyes but there's light swirling around them, you can see me, but I may be distracted. If I can see your eyes clearly, you can see me clearly, easy.

But the second level of affordance is that you can still communicate using the eyes themselves. Sensors on the inside are reading your face, which means that if I speak to you, you can still make eye contact with me. I can see that even with the headset on, I do have your attention. I can see if your attention drifts for a moment, distracted by some notification or 3D dinosaur video. And then I can see if you suddenly tune me out, as your eyes go cloudy mid-sentence, which is sure to become a power move in any office where Vision Pro is actually used.

It might not be a full, romantic, gazing into each other's eyes experience, but it's a lot better than nothing.

But that's the key – this is the kind of thing that shows Apple is thinking about people using this in the real world. It solves an actual problem, enabling you to stay in the headset for longer, rather then wearing it becoming a hassle because you need to take it off constantly to talk to people, because it's not enough that you can see them – they need to see you too. Does it look silly? Yeah, sure, okay. So did AirPods at first. Then we got used to them. Then they took over the world.

ABOUT MATT BOLTON

Matt is Managing Editor at *TechRadar.com*, and previously worked on *T3*, *MacLife* and *MacFormat*. He's been charting Apple's ups and downs since his student days, but still hopes to hear "one more thing".

Image credit: Apple Inc

THE M2 ULTRA IN NUMBERS

We lift the lid on the chip inside Apple's most powerful Macs yet – the 2023 Mac Studio and Mac Pro

6
› Maximum number of Pro Display XDRs the M2 Ultra's display engine can support, enabling it to drive up to 100 million pixels.

22
› Number of streams of 8K ProRes 422 video that the M2 Ultra can play back at the same time.

30%
› Increase in graphics performance in the M2 Ultra over the M1 Ultra – that's because the new chip can be configured with up to 76 GPU cores – 12 more than before.

24
› Number of processor cores inside the M2 Ultra, comprising 16 high-performance cores and eight high-efficiency cores.

134 billion
› Number of transistors in the M2 Ultra – that's 20 billion more than the M1 Ultra.

800GB/sec
› Memory bandwidth of the M2 Ultra, which is twice that of the M2 Max.

192GB
› Maximum memory capacity of the M2 Ultra, which is 50% more than its M1 Ultra predecessor.

2.5TB/sec
› Stated bandwidth of the low-latency interprocessor used in Apple's UltraFusion tech, which enables it to combine two M2 Max SoCs into the super-powerful M2 Ultra.

31,600,000,000,000
› Number of operations that can be performed per second by the M2 Ultra's 32-core Neural Engine, making it 40% faster than the one in the M1 Ultra.

Image credit: Apple Inc

Your next OS updates revealed

Your Mac, iPhone, iPad and Apple Watch are about to get even better – find out what's new in macOS Sonoma, iOS 17, iPadOS 17 and more

Written by Ian Osborne, David Crookes

This year's Apple Worldwide Developers Conference (WWDC) was packed with incredible hardware – but you don't have to spend a fortune to get some great new features. In fact almost all of them will be coming your way for free! That's because alongside the flashy new Vision Pro, super-powerful Mac Studio and Mac Pro and the ever so delicious 15-inch MacBook Air, Apple also unveiled its next big operating system updates: namely macOS Sonoma, iOS 17, iPadOS 17 and watchOS 10. Plus a ton of Audio and Home improvements, all of which will be available later this year.

One of the biggest additions across the board is Journal, a new journalling app which enables you to log your favourite moments from your day with supporting photos, videos and music to make your memories shine. And widgets are going Large (as well as Small and Medium) in all kinds of surprising ways on your Mac, iPad and Watch, offering new levels of customisation and interactivity, so making it easy to view and make the changes you need without having to dive into the full-blown app.

Other goodies include AirPlay and AirPods audio improvements, plus an even bigger focus on privacy. So pop the kettle on, settle into your comfiest chair and join us as we explore the changes over the next nine pages...

Image credit: Apple Inc

Mon Jun 5 9:41 AM
Sunny
H:88° L:57°
12 PM
1 PM
2 PM
3 PM
81°
85°
88°
Cupertino
Tokyo
Sydney
Paris
MONDAY
5
Test shoot feedback
More ambient light
8:30 AM
Monday, June 5
9:41
It looks like you're delayed.
End Check In
Add Time

Introducing macOS Sonoma

Apple's been working very hard on macOS 14, but what does have in store for us?

Sonoma, named after a city in California's wine-making region, isn't a radical overhaul of macOS. Instead, it brings new features to the Finder and existing apps. There are new reactions in video chats that can be triggered with a gesture, you can share Safari passwords and passkeys with a family group and, for privacy, Safari locks Private Browsing windows when you're not using them, and prevents known trackers from loading and removes URL trackers. You can also websites in Safari to the Dock. When opened from there they look more app-like, with a simplified toolbar. But what else is new? Let's take a look...

macOS Sonoma highlights

Screen savers

Game mode

Presenter Overlay

Web apps in Dock

Locked Private Browsing windows

Predictive text

Document AutoFill

Image credit: Apple Inc

Presenter overlay

This video conferencing feature lets you show your screen while on a video call without losing your face. With Small Overlay, your image appears in a movable bubble. Large Overlay has your shared screen appear between yourself and the background. It's great for showing content, and it works in any Mac video app.

Game Mode

Game Mode gives you the edge. It's designed to prioritise running the game you're playing on the CPU and GPU, keeping other tasks in the background. When using AirPods, audio latency is reduced, as is input latency with Xbox and PlayStation controllers, by doubling the Bluetooth sample rate. It works with any game.

Profiles in Safari

Profiles lets you separate your cookies, history, extensions and favourites between work and personal browsing. You can then sign into the same site with your work account and personal account and switch between them. Students can set up a collection of extensions and favourites for school too.

Widgets on desktop

The way macOS uses Widgets is to change. Instead of being restricted to the Notifications Centre, you can now drag them onto your desktop. You can place them anywhere in the desktop area, and to stop widgets becoming a distraction, they cleverly fade into the background, matching your Mac's wallpaper, when you're using an app or doing something else. You can add new widgets from a Widget Gallery, and you'll even be able to access favourite iPhone widgets on your Mac desktop too.

Screensavers

New screensavers show slow-mo videos from around the world. Look out for the Hong Kong skyline, sandstone hills in Monument Valley and (of course) the vineyards of Sonoma. When you log into your Mac, the image stops moving and settles into your desktop.

Image credit: Apple Inc

Whats new in iOS 17

Some great visual and practical enhancements are coming to iPhone

The forthcoming iOS 17 update makes things you do on iPhone more 'personal and intuitive'. For example, in FaceTime when you call someone who doesn't pick up you can leave a video message for them. In Messages, Catch Up puts a chevron in a Message chat. Tap it to go to the first unread message. In Group Chats, you can swipe any bubble to reply. Audio messages can be transcribed too. There are also lots of new visual and interface tweaks to look forward to.

NameDrop

NameDrop can be used to share contact info with someone nearby. Simply bring your phones together, and choose which phone numbers and email addresses you want to share. You can then exchange details at the tap of a button. You can also use NameDrop with an iPhone and an Apple Watch, and share with AirDrop by bringing your phones together.

Contact Posters

When you make a phone call, Contact Posters sets how you're represented by the receiver. You can use photos or memoji, choose a font and colour to show your name, and change the background colour too. This new visual identity also becomes part of your Contacts card, and is made available to developers using third-party video chat apps.

Live Voicemail

A call comes in from an unknown number. Do you pick it up? Let it go to voicemail, and Live Voicemail shows a real-time transcription of the message being left for you. As the caller speaks, their words are converted into text. If it's something you want to deal with there and then, you can pick up the call. Otherwise, let the voicemail run its course.

iOS 17 highlights

Standby

Contact Posters

Offline maps

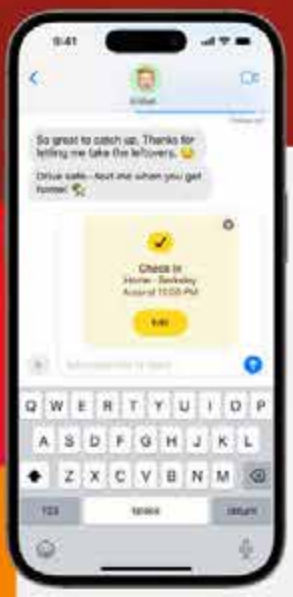
Find My item sharing

Pets albums in Photos

Improved autocorrect

Check In

Image credit: Apple Inc



Check In – a personal safety feature

To let a friend or family member know you got home safely, set up a Check In and, as soon as you get home, your iPhone recognises you're there and lets the other person know. If you're delayed for any reason, Check In recognises this and prompts you to send a notification. If you don't, the feature can send useful information such as your current location, the route you're taking and your battery level and mobile phone service status, just in case you're on your way but your phone's dead or you have no coverage. All this information is end-to-end encrypted for your privacy.

Journal

The new Journal app lets you relive precious moments from the past. Using machine learning, your iPhone creates personalised suggestions of what to put into your Journal. This includes photos, maps, music, workouts and more. Journal will be coming to iPhone later this year.

Offline Maps

In a very welcome update to the Maps app, in iOS 17 you can select an area to download to your iPhone, and use it offline. This will prove very welcome for places with a patchy network coverage, or simply for when you want to preserve your battery life by turning Wi-Fi and mobile data off on your phone.

Autocorrect

In iOS 17, the keyboard is more intelligent. Autocorrect has been significantly improved, and it's easier to revert to what you actually typed if an autocorrect isn't needed. Inline sentence completion predicts how you want to end a sentence, and if this is correct, you can complete it simply by tapping the Space bar.

StandBy

When charging your iPhone, if you place it on its side (landscape mode), you get a full-screen digital clock. It's great for your bedside table or desk, especially with an iPhone 14 Pro's always-on display. You can customise the clock style, and other on-screen information.

Journal

Live Voicemail

NameDrop

Leave a FaceTime message

Image credit: Apple Inc

Top tablet tweaks iPadOS 17

What does this autumn OS update have in store for Apple's popular tablet computer?

Redesigned Lock Screen

A lot of what Apple is planning for iPadOS 17 will be familiar to iPhone owners. Quite a few features introduced with iOS 16 make their way to the iPad with the next update. The Lock Screen, for example, has been redesigned to match the smartphone. You can design your own screen, choosing a wallpaper, a font and more, and Live Photos on the Lock Screen are enhanced with additional frames for a slow-mo effect. And, of course, you can add widgets.

Widgets

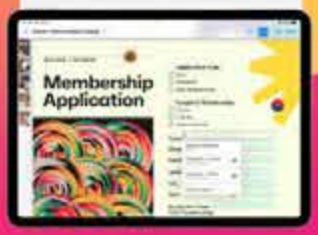
Widgets have now been made interactive. Whereas before you could only tap a widget to open its parent app, you can also use the app directly from the widget. For example, the Reminders widget lets you see your reminders. In iPadOS 17, you can also tap one to mark it as complete. You can operate your smart home devices from the Home widget, or play music from the Music mini-app. Third-party developers can make their widgets interactive too.

Health app

The Health app debuts on the tablet with iPadOS 17. It's reimagined to take advantage of the larger screen, which makes it easier to look at health charts. It syncs with the Health apps on the iPhone and the Apple Watch too.

PDF AutoFill

Improved features mean you can fill in PDF forms, using autofill or typing. You can also add a pre-saved signature, or make a new one. Return a completed form to the sender in Mail, or save it to Files.



iPadOS 17 highlights

Live Activities

Flexible layouts

AirDrop continues when out of range

New tools in Freeform

Safari Profiles

External Camera on iPad

Image credit: Apple Inc

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Say hello to watchOS 10

It's time to make your Apple Watch even more intuitive

WatchOS 10 adds many new features but also rethinks how you should engage with your Apple Watch. There's now a greater emphasis on sharing info as quickly and conveniently as possible, letting you perform multiple tasks without spending lots of time scrolling, tapping and squinting at a small screen.

That said, much of the redesign takes into account the larger displays of more recent models, notably the Apple Watch Ultra. Apple is also ditching age-old features such as the Dock in favour of fresh offerings such as relevant widgets. The result is a device more useful and usable than before.

New ways to navigate

Navigation has been simplified. Rotate the Digital Crown to move through Home Screen apps, cycle between multiple, clearly defined tabs and access the new Smart Stacks. Click the side button once to open the Control Centre. Twice opens Wallet.

NameDrop

AirDrop makes it easy to share content between Apple devices using Bluetooth and Wi-Fi. NameDrop works in the same way. Share contact details by moving your Watch close to an iPhone or tap My Card in Contacts and bring two Watches together.

watchOS 10 highlights

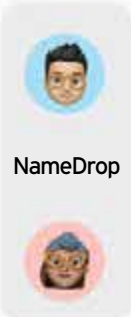


Image credit: Apple Inc

Mental health

The Mindfulness app lets you log how you're feeling at any time of the day using the Digital Crown to scroll through a set of emotions. It syncs with the iOS and iPad Health app to help identify reasons for your mood with all data kept totally private.

Smart stack

Widgets are a key part of the new watchOS experience, reachable from any watch face via a new Smart Stack feature. Turn the Digital Crown and they appear, showing info relevant to situations and times – the Calendar widget's prioritised for an upcoming meeting, for example. Widgets can be added/managed as well.

Topographic Maps

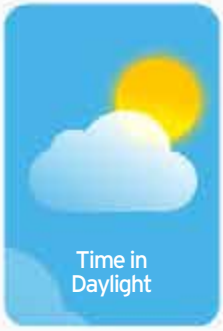
Although initially US-only, Apple Maps includes elevation points, hill shading and contour lines when viewing mountains, lakes, valleys and rivers. Check points of interest and search for nearby trails, assessing their difficulty, length and the time taken. Offline maps on iPhone can be viewed on a paired Apple Watch too.

All-new app designs

As well as introducing Snoopy and Woodstock faces, watchOS 10 has a fresh look that makes better use of the Watch's small screen. The World Clock has dynamic background colours so you can instantly see the time of day while Stocks, Home, Maps, Weather and Messages benefit from using the entire display to show extra content. Developers of third-party apps are being asked to follow suit, creating software that optimises glanceability and has a short interaction time.

Fitness App

WatchOS 10 steps up a gear for cyclists. Workouts started on Apple Watch are shown as a Live Activity on iPhone. You can also connect a Bluetooth-enabled speed sensor, cadence sensor or power meter for extra metrics. Fitness+ adds custom workouts or meditation schedules based on workout type, duration and day.



Snoopy & Woodstock

New features for Fitness+

Image credit: Apple Inc

tvOS will feature a new Control Centre, and you'll be able to locate your Siri Remote using your iPhone.

Latest in audio and home

From easier conversations to content when travelling, there are plenty of changes

Apple and audio go together like John Travolta and Olivia Newton-John! From the iPod and iTunes to AirPods and Apple Music, the company has proven revolutionary and shows no signs of slowing down. At WWDC, Apple unveiled features that take listening to another level. Aside from adding Collaborative Playlists and comprehensive info about the artists behind your favourite songs to Apple Music, there are goodies for AirPods, HomePod and CarPlay. Your viewing pleasure is being given a boost as well.

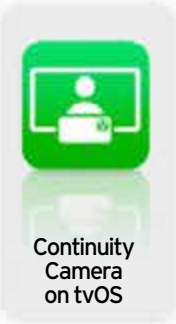
Adaptive audio

Adaptive Audio dynamically blends active noise cancellation (which removes unwanted background noise) with the transparency mode (the one that still allows you to hear outside sound). When on the go, your AirPods Pro will analyse your environment, reduce annoying sounds and adapt the audio to ensure you enjoy the best listening experience.

Audio & home highlights

FaceTime on Apple TV

Locate Siri Remote


Continuity Camera on tvOS

Smart AirPlay suggestions

Image credit: Apple Inc

FaceTime on Apple TV

It's fair to say tvOS tends to lag behind Apple's other operating systems in terms of gaining new features so we're pleased to see FaceTime arriving on Apple TV 4K. Calls can be initiated directly from Apple's digital media player or handed off from iPhone and iPad. In either case, you'd need to place your iPhone/iPad in front of your television with the back cameras pointing towards you.

Press to mute

If you're on a call, iOS 17 will allow you to instantly mute and unmute your side of the conversation via your AirPods without having to pick up your iPhone. Just press the stem of your AirPods Pro or AirPods (third-gen onwards) or press the Digital Crown of your AirPods Max for more control over your chat.

AirPlay in hotels

You're never quite sure what channels you're going to get on a hotel TV. But instead of watching content on your iPhone, fire up AirPlay and stream video and audio directly to the television. Apple has partnered with some hotel brands including IHG Hotels & Resorts, letting you scan an QR code, kick back and enjoy.

Screen Saver with Memories

As well as a selection of new screen saver locations including California's coastal redwoods, tvOS 17 is letting you display curated Memories from your personal library or shared library when Apple TV is idle.

SharePlay in the car

Thanks to CarPlay's use of SharePlay, the choice of music being played during a drive can now be more democratic. Trusted iPhone devices can simply join an Apple Music session, with listeners using their own device to control the tunes.

Control Centre comes to tvOS

Adaptive Audio

Siri support for AirPlay on HomePod

Apple didn't make much of this handy feature but if you use YouTube Music, Audible, Tidal, Soundcloud, Overcast (or Migu Music), you can ask Siri to play content from them on HomePod.

Image credit: Apple Inc

Mac FORMAT INVESTIGATES

Subscribe to Apple

What's Apple's stance on this new subscription-based world?

WRITTEN BY **CHARLOTTE HENRY**

For decades, Apple's business model was almost exclusively based on one-off sales of high-cost products. Firstly Macs, then later iPods, iPhones, iPads and so on. Sure, the company wanted you to come back and upgrade your Mac, but that might only happen a few years down the line. Similarly, most people did not, and still do not, buy a new iPhone annually. In addition, Apple's software products tended to require a significant one-off payment. It wasn't that long ago they even charged users to upgrade to the latest Mac operating system!

Services have become an increasingly important part of Apple's business in recent years, enabling the company to keeps generating revenue from customers who are not buying new Macs or iPhones. We've seen the introduction of Apple Music, Apple TV+ and iCloud storage, to name but a few. Furthermore, many of these have been consolidated into Apple One bundles, in which you pay to access a collection of services. Significantly, these services and bundles are offered on a subscription basis – monthly or annual payments. And it has worked. Results for the first quarter of 2023 showed that Apple generated a record-breaking $20.8 billion in revenue from services.

In another major development, in early May 2023, Apple released Logic Pro and Final Cut Pro for iPad as subscription products. These music and video-editing apps each cost £4.99 per month or £49 per year. This seems particularly meaningful as it moves Apple into the Software as a Service (SaaS) space. You can argue that things like Apple Music are SaaS products, but this move felt different as Logic Pro and Final Cut Pro had been 'traditional' items bought with a one-off payment. It is worth noting that products such as Microsoft's Office suite have long been available via subscription; you can do so via the App Store.

Whether it is a streaming service or a Substack newsletter, subscriptions are becoming increasingly prominent. We are very much used to paying for products we want on a rolling annual or monthly basis. It suits the providers as they can generate consistent income, with customers over time paying more than they would have in a one-off payment. It also suits consumers. While we might end up paying more overall, subscriptions mean we do not have to cough up a huge sum of money in one go and can even stop paying for a service temporarily if we do not want it for a bit.

There was a subscription boom during the Covid-19 pandemic as software and media services were one of the few

While Logic Pro and Final Cut Pro were once one-off purchases, they are now sold on a subscription basis.

Image credit: Apple Inc

For our latest subscription offer see page 32!

Subscribe today!

things still available to spend any disposable income on (and kill time with for many of us during the lockdowns). However, with the current global financial situation and cost of living pressures, things are not so straightforward now.

Certainly, the economic climate might encourage consumers to buy products on subscription that they could not afford to pay for outright. However, the flexibility of subscriptions also makes it easier for households to cancel and limit the services being paid for in an attempt to balance budgets.

Back in September 2022, media analysts Enders Analysis predicted that "with the cost-of-living crisis consumers may have to choose between pay-TV and SVOD [Streaming Video on Demand] services, with pay-TV being more sticky." They explained that "television is the bedrock of viewing." People are more likely to cut something like Apple TV+ before they cancel Sky TV or an equivalent.

Gatekeeper power

Regulators are also taking a look at elements that affect the subscription market. For example, the UK's Competition and Markets Authority (CMA) touched on things relevant to the issue whilst conducting a broader investigation into the mobile ecosystem.

In its final report, released in June 2022, it noted the "gatekeeper" power that both Apple and Google have due to their dominant position in the world of mobile operating systems. This means they can control which apps we consumers see and use, and they take a cut of any subscriptions we buy. This is particularly relevant to Apple given the strict rules around purchasing apps via the App Store and using Apple Pay. As the CMA report noted: "Both the App Store and [Google] Play Store require certain app developers to use their payment systems for in-app purchases and charge a commission of up to 30%, which contributes to the substantial and growing profits made by Apple and Google in relation to their app stores. If other distribution channels were effective constraints on the App Store and Play Store, we would expect to see lower commission rates or increased quality."

Apple Fitness+ costs £9.99/month, but it's also included in Apple One, which costs from £16.95/month.

Subs enable consumers to 'buy' products they could not pay for outright

The CMA suggested: "Ensuring transparency and clarity of information; avoiding choice architectures that might frame consumer choices misleadingly or others impede their ability to make clear, genuine and free-standing choices; and considering offering consumers the option of a subscription that does not auto-renew."

Ultimately, subscriptions often benefit Apple (and Google), even if they are not for one of its own products.

While the approach to Logic Pro and Final Cut Pro for iPad is notable, it is important not to overstate the shift from Apple. At its Worldwide

Some Apple subscriptions

Apple Arcade

Apple Arcade gives you unlimited access to over 200 games, without ads, for £4.99 per month.

Apple News+

Apple News+ provides content from leading newspapers and magazines and costs £9.99 per month.

Apple TV+

Apple original TV shows and movies. Costs £6.99 per month. An annual £69.99 subscription is also available.

Apple Care+

Insurance policies for Apple devices (cost depends on the device). There's also a Theft and Loss option.

Image credit: Apple Inc

Developers Conference in June, the company behaved just as it always had. It unveiled a host of products – a new MacBook Air, Mac Studio and Mac Pro - all sold in the standard way.

There was also the much anticipated Apple new Vision Pro headset, costing an eye-watering $3,499. This might have been an opportunity for Apple to test something different, such as offering the expensive product on a subscription/lease basis. However, it declined to do so. This is telling, given the Vision Pro is the first properly brand-new product Apple has released since the Apple Watch was first announced in 2014.

There will be more details to come about the Vision Pro as we get closer to its release in 2024. It is all but guaranteed that some of the software features it will offer will be available via subscription. Indeed, the presentation had a significant focus on using the Vision Pro to consume Apple TV+, and Disney+ and to watch sport. At the time of writing, though, it seems like Apple is sticking to its classic sales approach for the Vision Pro hardware.

Big-ticket options

While consumers are increasingly used to leasing big-ticket items like cars, it is hard to imagine Apple itself ever offering Macs on such a basis. As said, if it were interested in operating in such a way the new Vision Pro with its high price-point would seem like a very good product with which to try it out. A quick online search does though reveal that there are plenty of third-party companies leasing top-end Macs to businesses. Mobile networks operate in a similar way – pay a monthly fee for a new iPhone and then give it back at the end of the contract to start the process all over again.

Getting new Apple kit on subscription/ upgrade will mean more electronics end up in landfill...

While the Vision Pro will be an Apple hardware purchase, the headset will tap into subscription-based services such as Apple TV+ and Disney+.

That said, when it comes to the iPhone, Apple is also directly involved and has been since 2015. In both the UK and the US, it has an upgrade programme that means customers can get the latest iPhone every year. And yes, you pay via subscription. From £46.45 per month, you get the new model iPhone and Apple Care+ coverage. Customers in the UK need to have a SIM-only style contract with a mobile network, while in the US Apple connects with the carrier. Speaking to business outlet CNBC in 2019, Apple CEO Tim Cook explained:

"It begins to look like more of the traditional way of getting it through the carrier. So you wind up getting an incredible new phone that's so much better than what you had for $20, $30 a month or so."

A final thing to consider is the environmental impact of subscriptions. Making it easier to get a new iPhone every year may mean that more electronics and batteries end up in landfill, despite Apple's best efforts when it comes to recycling its products.

So, Apple is in the world of subscriptions in a relatively rudimentary way. While it undoubtedly cares about offering a range of services, and spent a lot of money trying to make Apple TV+ a success, they are not what the company's revenue and profits are based on right now. However, we know that Apple often enters a market or business space gently before doubling down and becoming a significant player. It is fair to assume then that in the coming years, it will begin to offer all sorts of products and services via regular payments.

iCloud+

Cloud storage from Apple. 50GB costs £0.79 per month, 200GB is £2.49 per month, 2TB costs £6.99 per month.

Apple Music

Unlike Spotify, Apple's music service does not have a freemium tier with ads. It costs £10.99 per month.

Apple Fitness+

A service providing a wide range of workouts and meditations costing £9.99 per month; £79.99 annually.

Apple One

Many of these services and more, such as Apple Arcade, are included as part of Apple One bundles. These cost £16.95, £22.95 or £32.95 depending on the services.

Image credit: Apple Inc

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Master Apple shortcuts

macOS

- *Cmd* is the Command key.
- *Alt* or *Opt* is the Option key.
- *Ctrl* is the Control key, also shown as '^' in shortcuts in the menu bar.
- The thick, outlined up arrow is the Shift key.
- The thin, left arrow or outlined pointer with 'X' inside is the Delete key, which deletes to the left. Pressing the Function key (Fn) and the Delete key deletes to the right.
- The thin, right arrow key with a small vertical line at the end is the Tab key, which shifts the focus between *some* controls.

iOS

- A *tap* is a brief contact of (usually) one finger on your device's screen.
- To *drag* is to move a finger across the screen to scroll or pan around content.
- *Swipe* means move one or more fingers across an item or the screen, then let go.
- A *flick* is like swiping, but it's quicker, and is often used to scroll content more quickly.
- *Pinch* means move two fingers together or apart, usually to zoom in or out.
- *Touch and hold* means lightly rest your finger on an item and wait for a reaction.

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Image credits: Apple Inc, Microsoft, Herd Works Inc, Skylum Software

Master Quick Actions

Make your Mac life even easier with the power of Actions

IT WILL TAKE
› 15 minutes

YOU WILL LEARN
› How to add useful Actions to Finder

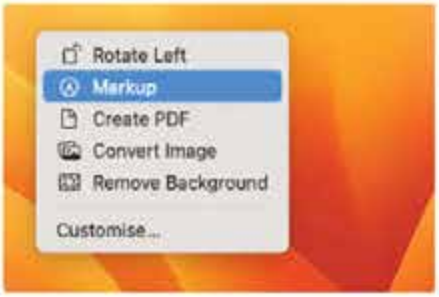
YOU'LL NEED
› macOS 12 or later

macOS is full of useful things, but it's not always obvious where they are. For example, one of the really cool features in Finder is tucked away in the Ctrl-click menu under Quick Actions. Here you'll find automations to turn photos into PDFs, to open PDFs in Markup mode and to change photos from one format to another, and you can also add your own.

Creating automations used to be the job of Automator, which was brilliant but pretty intimidating to newcomers. The Shortcuts app, introduced in macOS Monterey, is much friendlier – but, as we'll discover, it's still more than capable of doing some clever and useful things.

Quick Actions are a great way to automate everyday things. You can use one to automatically crop and resize your photos, for example. In this tutorial, we'll create one that automatically joins multiple images together. We're sure you'll have your own ideas, so get experimenting and let us know what you come up with. **Carrie Marshall**

HOW TO Create a Quick Action ›



1 Find in Finder

In Finder, Ctrl-click on any file and look for the Quick Actions option. Click on it to see a list of available Actions for that file (or none, depending on the file type). Here we've Ctrl-clicked on a photo; the actions do exactly what you'd expect.

2 Start a Shortcut

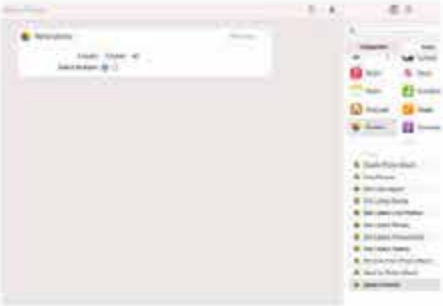
You can create very complex Actions in the Automator app, but Shortcuts is much friendlier. Open Shortcuts and create a new shortcut. You should see this window, with a sidebar of suggestions on the right.

3 Add your app

Click on Apps in the sidebar and choose the app you want to use in your Action. Let's use Photos to combine some images together. Click on Photos and then look for the Select Photos option. Double-click to add it.

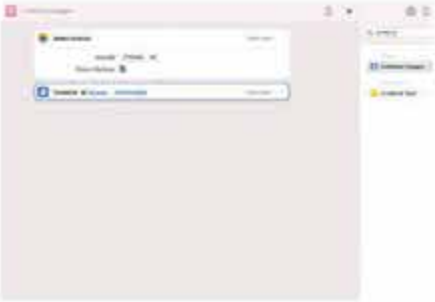
› Image credit: Apple Inc

CONTINUED... Create a Quick Action



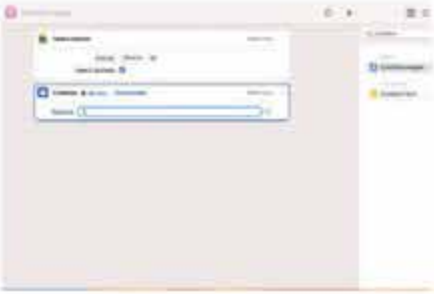
4 Add more images

This is your Action's input, where it's getting its data or files from. In this case we're processing photos and, in order to have multiple photos selected, we need to enable that by clicking on Show More and ticking Select Multiple.



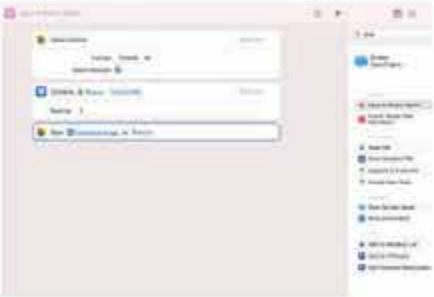
5 Add an instruction

Now we want to combine our selected images together. The fastest way to find that command is to type 'combine' in the search box; the one we want is Combine Images, so double-click on that one in the sidebar to add it.



6 Add some space

By default, your photos will be stitched together seamlessly. If you want to combine your photos while leaving a bit of space between them you can specify that by clicking Show More and entering a number in the Spacing field.



7 Save your results

We've set the input and specified the activity; we need to tell Shortcuts what to do with the result – ie, to 'Save to Photo Album'. Use the search box to find that and double-click; you can change the destination from Recents if you wish.

8 Test your action

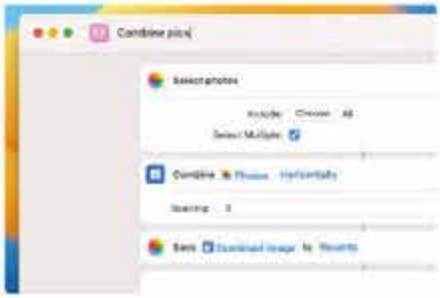
Press the Play icon at the top of the screen to test-run your Action. If it's working you should now see the Photos library window, and you should be able to select multiple images. Do that and then click on Add.

9 See the results

After a moment, you should see the result of your Action – three separate images stitched together – in the main editing window. We need to check whether the shortcut added the combined image to the Recents album in Photos.

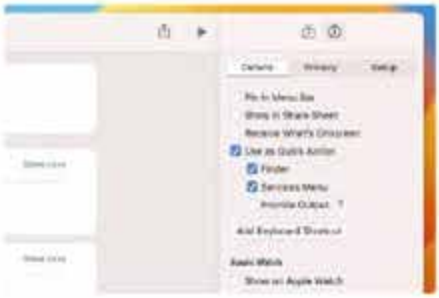
10 Open the app

Open Photos and navigate to your Recents folder. It may take a few seconds for your library to update, but if your shortcut has worked you should now have your newly combined image as the most recent addition in Recents.



11 Name your shortcut

If the shortcut works, it's time to give it a name. This should be descriptive, as it's the name that'll appear in Quick Actions when you've finished. Simply double-click the name at the top of the window and type the new one.



12 Add it to Actions

Click on the Info icon (top right of the window) to see options including 'Pin in Menu Bar', 'Show in Share Sheet' and so on. We want 'Use as Quick Action' so we can bring it up quickly in Finder, so tick that before closing Shortcuts.

Manage your email like a pro with Outlook

Outlook is now free for all Mac users. Here's how to get the most from it

IT WILL TAKE
› 30 minutes

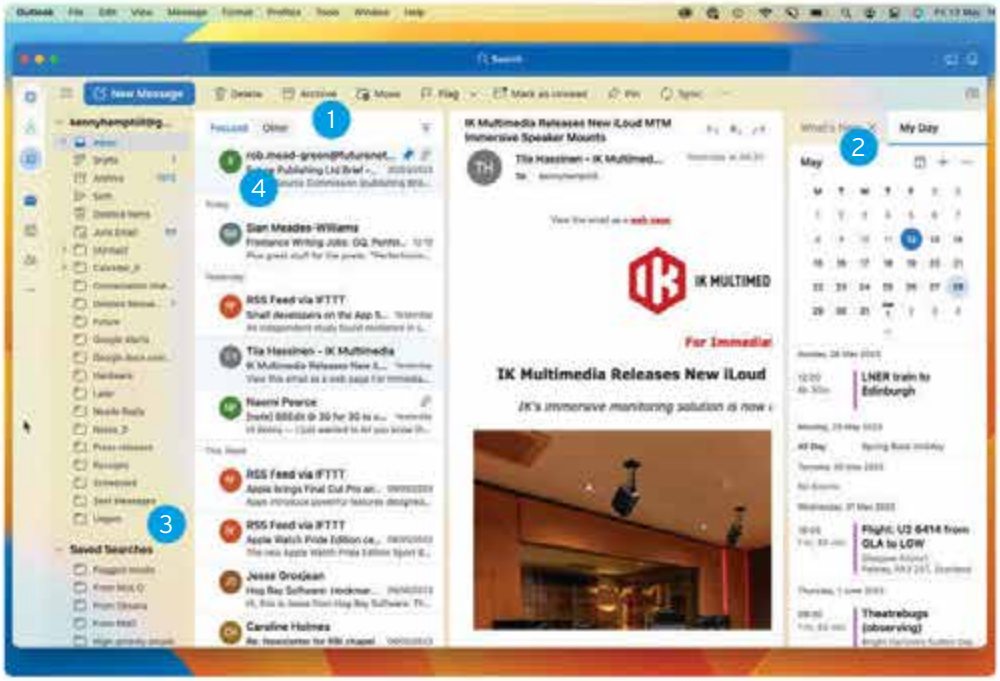
YOU WILL LEARN
› How to use Outlook for Mac to manage your email

YOU'LL NEED
› Outlook for Mac, macOS 11 or later

Microsoft's Outlook has had something of a chequered history on the Mac. At various times it's been a useful option for business users who rely on Microsoft's Office suite, a reasonable alternative to Apple's Mail, and an application that felt like the very poor relation of its Windows version and was best avoided. Since its overhaul a few years ago, however, it's been a serious contender for the best email application for both business and personal use. And that position was bolstered earlier this year when Microsoft announced Outlook for Mac could be downloaded and used completely free of charge and would no longer need an Office 365 subscription.

There's a great deal to like about Outlook, not least that it looks and feels like a Mac app and adopts many macOS features like Handoff, Widgets, and integration with Notification Centre. Then there's the option to create profiles for, say, business and personal email accounts, the automatic filtering of incoming messages into Focused and Other inboxes, and the ability to save searches as smart folders. Let's get started. **Kenny Hemphill**

EXPLAINED... Outlook's interface ›



1 Filters
› Incoming mail is filtered into Focused and Other inboxes, allowing you to quickly see the most important new messages.

2 My Day
› The sidebar can display upcoming appointments, an agenda for the day, or Outlook's newest features.

3 Saved searches
› You can save searches you make often as a smart folder, allowing you to easily find up-to-date results.

4 Pin to top
› Incoming messages you don't want to forget about can be pinned to the top of the inbox.

› Image credits: Apple Inc, Microsoft Corp

HOW TO Set up and use Outlook for Mac >

1 Add an account

Once you've downloaded and installed Outlook from the Mac App Store, click on the Outlook menu and choose Settings, then Accounts. Click the '+' (at the bottom) and choose New Account. Type the email address and click Continue.

2 Finish adding account

Once you've typed in the email address, Outlook will determine the type of account it is and ask you for the details it needs. You will need to generate an app-specific password on appleid.apple.com for iCloud email accounts.

3 Create a profile

If you use Outlook with multiple email addresses, create a profile for each by clicking the globe icon at the top right, then choosing the type of profiles you want to add. Click Next and follow the on-screen instructions.

4 Manage profiles

Go to Outlook > Settings > Profiles. Click on the profile you want to alter, and choose from the Theme, Icon, Appearance and Notifications options. You can also change the name and the email addresses that apply to the profile.

5 Save a search

Type some criteria in one or more of the search options, and click the filter button at the right to refine the search. Once you're happy with the terms, click Save Search. Type a name for the search in the folder when it appears.

6 Customise search

You can choose whether the search tool looks through everywhere, the current mailbox, or the current folder. Click the Outlook menu, then Settings and Search. Choose from the options for narrowing the search.

7 Manage calendars

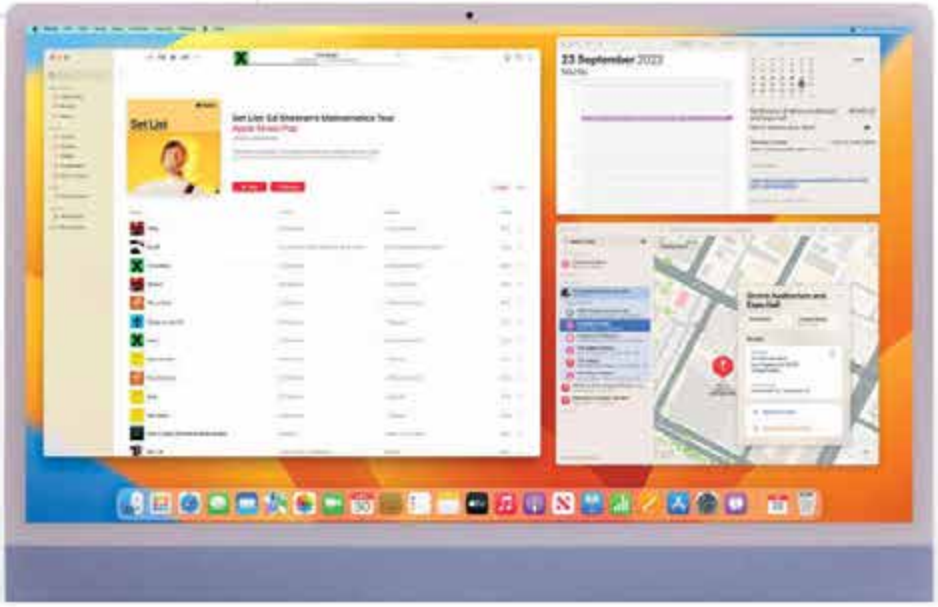
Click on the sidebar button at the top right of the window to view your various calendars. Click the '...' to choose between Calendar view and Agenda. To choose which calendars are displayed, click the Settings icon.

8 Use notifications

Go to System Settings > Notifications > Microsoft Outlook and enable notifications. In Outlook, go to Outlook > Settings > Notifications and Sounds, and choose macOS Notification Centre from Event Reminder Style.

9 Customise the toolbar

Click on the '...' in the toolbar and choose Customise Toolbar. Drag elements you want to add to the toolbar into the row at the very top of the window. To remove items, drag them off the top row and drop them.



Discover live music near you

Find out who's playing and where with help from Apple Music and Maps

IT WILL TAKE
10 minutes

YOU WILL LEARN
How to find music guides and set lists for your favourite artists and venues

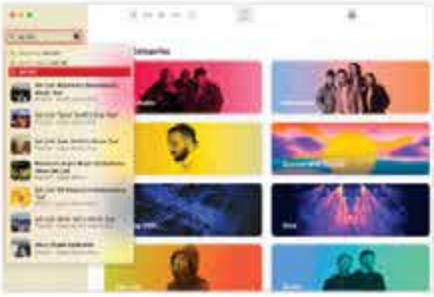
YOU'LL NEED
Apple Music and Apple Maps

Whether you fancy finding out who's playing at your local music hotspot, or seeing when one of your favourite artists is on tour, Apple Music and Apple Maps can help – thanks to some handy new feature additions in macOS Ventura 13.4, iOS 16.5 and iPadOS 16.5.

Apple Music now comes with Set Lists, which are curated playlists of songs of currently touring artists, with links to venues and dates on their current tour. And Apple Maps contains Apple Music Guides (currently 44 in total), showcasing music genres and venues in major cities around the world, with links to relevant playlists, venue information and links to upcoming concerts. Both are a great way to find out what's happening near you.

At the moment, these new features are somewhat hidden in both apps, suggesting that Apple is trialling them ahead of the next major OS updates for Mac, iPhone and iPad, when they'll hopefully become more prominent. But let's see what these additions offer for music fans now. **Rob Mead-Green**

HOW TO Find set lists, music guides and more



1 Find artist set lists

Open the Music app on your Mac and type 'set list' into the Search field at the top of the left-hand sidebar. You should see some results straight away. Or, click Browse in the sidebar, press Return, then select the Apple Music tab top right.

2 See all the set lists

You'll see some of the available set lists under Top Results at the top of the main window, but to see more scroll down to Playlists for more. To see them all, scroll down to Categories, then click the Set Lists entry that is shown there.

3 Browse the set lists

In the Set Lists category, you will see a list of some of the artists who are currently touring. Scroll down to see them all. Click a set list under an artist's name to see a playlist of tracks or click Browse Upcoming Shows below that.

Image credit: Apple Inc

CONTINUED... Find set lists, music guides and more >

4 Add Set List to library

A set list on Apple Music is simply a playlist of songs by a particular artist, rather than being a collection of live performances from their current tour. Still, click '+Add' at the top of a selected playlist to add it to your Music library.

5 See tour dates

Go back to step 3, but this time click Browse Upcoming Shows to see a list of concerts that artist is due to play. Safari will open to a web page showing the relevant info from Shazam. Hover the pointer over a tour date for more info.

6 View concert details

A View Concert button should now appear. Click it to be taken to the relevant concert web page. Here you'll find more info about the show, relevant playlists and more. To add the tour date to your calendar, click 'Add to Calendar'.

7 Add date to Calendar

Safari will download an .ics file containing info about the gig to Finder > Downloads. Double-clicking the file will add that info to the relevant date in your Mac's Calendar app. Add the date to an existing calendar or create a new one.

8 See venue details

Go back to the View Concert web page in Safari, but this time click View Location. Doing so takes you to the venue's entry in the Maps app, enabling you to find out more about it. You can use this to get driving directions too.

9 Buy gig tickets

To purchase tickets for a concert, go back to the View Concert web page in Safari, but this time click the Tickets button. Next, choose an option from the 'Get tickets from:' option that's displayed – either Ticketmaster or Bandsintown.

10 Find music guides

Now let's try Maps. Open the Maps app and type 'Apple Music' into the Search field at the top of the left-hand sidebar. Next, click the Guides button that appears below the 'Apple Music - Discover live music' entry.

11 Choose a music guide

An Apple Music pane will appear, containing over 40 music guides. Click the All Guides drop-down menu to narrow your search to a specific city – only nine are currently listed, but that's sure to change as the number of entries grows.

12 Explore a guide

Select a guide to find out more. In it, you'll see able to see all of the relevant venues in a given location, detailed info about each venue, links to relevant Apple Music playlists, and to upcoming concert dates for the weeks and months ahead.

Find anything on a web page

Use The Magic Highlighter to find online search terms fast

IT WILL TAKE
› 5 minutes

YOU WILL LEARN
› How to use The Magic Highlighter to emphasise words on a web page

YOU'LL NEED
› The Magic Highlighter (£1.99), macOS 10.14 or later

It's so good that you could end up ditching the familiar Cmd+F shortcut

When you use a search engine, it's easy enough to find web pages that purport to contain your search terms. But actually locating those terms within the page you've opened? That can be trickier, and often has you desperately reaching for the Cmd+F keyboard shortcut after a bunch of fruitless scrolling. It's extra hassle when things really should be easier.

The Magic Highlighter makes it easy to find your search terms on a web page, and it can be tweaked and customised as you need.

Cue The Magic Highlighter. This Safari extension automatically highlights your search terms on any page found through search engines like Google, Bing and DuckDuckGo, making it incredibly easy to discover the content you're after. It's so good that you could end up ditching the familiar Cmd+F shortcut before too long.

Customisation and extras

As well as being quick and easy to use, The Magic Highlighter is also very customisable. You can add and remove highlighted words on the fly, change the colour of the on-page emphasis, and toggle highlighted words on and off individually. The extension works across macOS, iOS and iPadOS, making its £1.99 price tag excellent value.

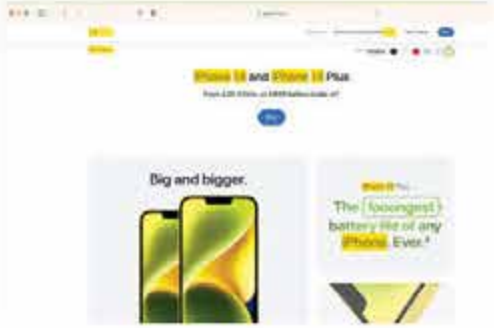
A recent update brought a string of significant new features and improvements to the extension. Among the changes were extra keyboard shortcuts, filtering of noise words like 'what' and 'is' so they don't clog your page, and much more. **Alex Blake**

› Image credits: Apple Inc, Herd Works Inc

HOW TO Use The Magic Highlighter ›

1 Enable the app

Open Safari then, in its menu bar, click Safari › Settings › Extensions and click The Magic Highlighter in the sidebar. Tick the checkbox on the left of the extension's name, then click 'Always Allow on Every Website'.



2 See the results

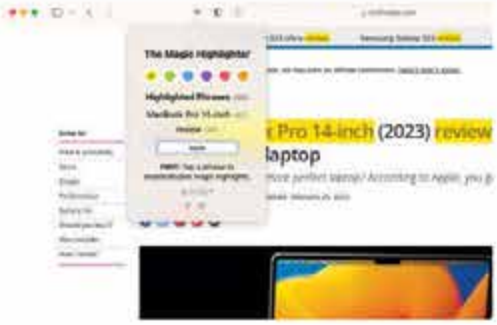
Now go to a search engine and enter a query. When you click a result, you'll see your search terms automatically highlighted in yellow on the page. Right now, the app doesn't highlight words on the search page itself.

3 Show or hide

Press Cmd+Shift+F or click The Magic Highlighter's icon at the top of the Safari window to see its settings. You will see all the words from your search phrase – click each one to show or hide it on the web page.

4 Search in quotes

If you search for a phrase in quote marks, The Magic Highlighter will let you show or hide this entire phrase on web pages. This can be a handy way to save on clicks when enabling or disabling highlighted results.



5 Add or remove

Underneath the highlighted phrases in the pop-up window, press '+' to add another word or phrase (or press F while the menu is open). You can also click an existing word and press D to remove it from the highlight list.

6 Change the colour

In the same menu at the top of the Safari window, you can change the default colour used to highlight words. This is yellow by default, but you can change it to green, blue, purple, red or orange, if you prefer.

Genius tip!

› While The Magic Highlighter's settings menu is open in Safari, you can press 'A' to quickly toggle all highlighted phrases on or off.

Genius tip!

› The app ignores filler words like 'and' automatically. Open the app's menu and click the toggle at the bottom to tweak the ignored words list.

Get fit with SmartGym

Work out better with AI-made routines

IT WILL TAKE
› 10 minutes set-up, plus workout time

YOU WILL LEARN
› How to log your workouts and try new exercises with SmartGym

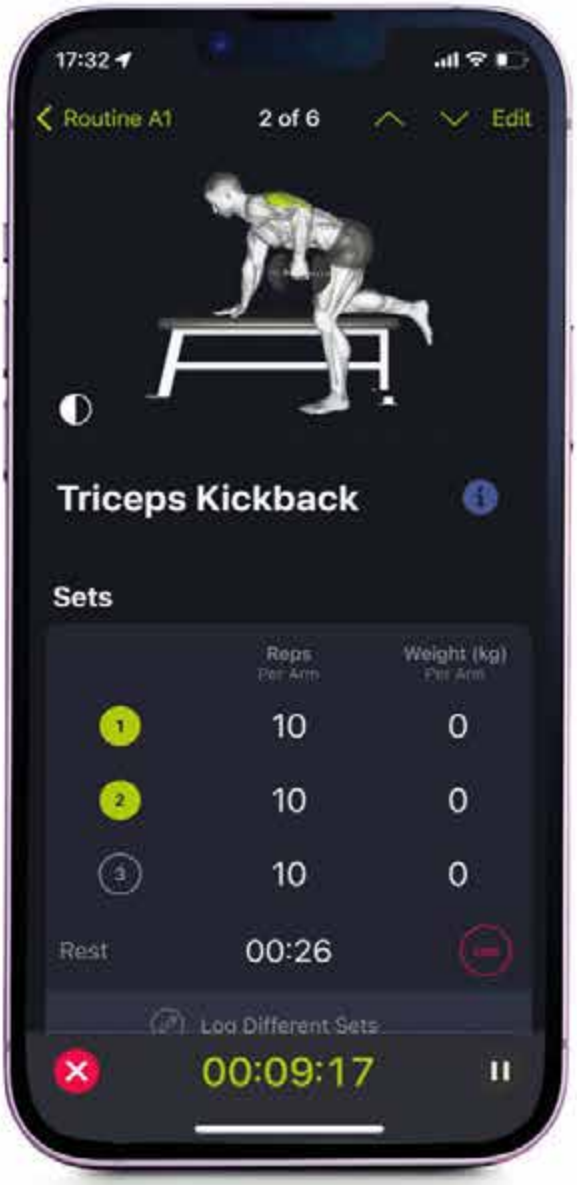
YOU'LL NEED
› SmartyGym (Free, offers IAPs), iOS 12 or later

Tracking your workouts isn't always easy. Apple's Workout app doesn't show exercises with sets and reps, while logging your gym work in an app like Notes is hardly optimal. Fortunately, there's a better way in the form of SmartGym.

With this app, you can set your own routines or use AI-designed workouts made by SmartGym. Over time, it learns and adjusts based on your sessions. Each exercise features an animation and a detailed explanation to help you do it correctly, and you'll see the number of reps, sets and rest duration as you go along.

Everything can be linked to Apple Health and you never miss out on closing your rings. There's also a great companion Apple Watch app, so you don't even need your iPhone when you're pumping iron.

SmartGym's free version grants access to two routines, 10 histories and two measures. Subscriptions start at £6.99 a month, and we'll cover some of the premium features in this tutorial. **Alex Blake**



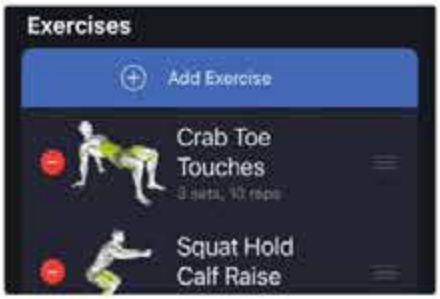
HOW TO Get fit with SmartGym ›

1 Log your gear

When you first load SmartGym, it will ask you what equipment you will use, either at home or in the gym. To update your selection, tap the More tab, then tap Available Equipment under the Smart Trainer heading.

2 Create a workout

To start, tap the '+' in the top-right corner. You'll have three choices: create a workout from scratch; let the app's Smart Trainer make one for you; or specify muscles you want to target and let the Smart Trainer do the rest.



3 Start from scratch

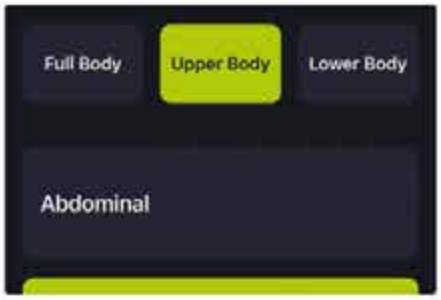
Tap Create From Scratch. Enter your workout name and goal, then tap Add Exercise. Choose from the app's extensive workout library, enter details like reps and rest time, then tap Save. Add as many exercises as you like.

Image credits: Apple Inc, SmartGym

CONTINUED... Get fit with SmartGym

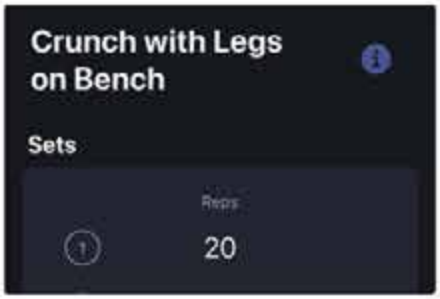
4 Robo workout

Now try tapping '+' then Trust Us. Choose how many days a week you want to do the workout. You can change your experience level and exercise goal under Options. When you're ready, tap Add Workout for an AI-crafted plan.



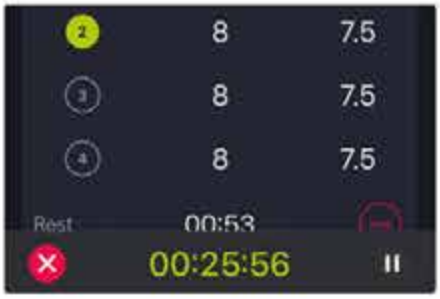
5 Tailor-made

Finally, tap '+' then Create For Muscles. You can pick full, upper or lower body to choose different muscle groups (tap a muscle region to add or remove it). Specify workout goals and duration, then tap Add Workout.



6 Pump some iron

Now it's time to start working out. Under All Routines, pick one of your created routines and tap Start. You'll now see the first exercise with the number of reps required. Animations at the top guide your form.

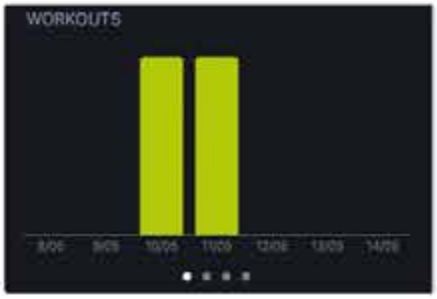


7 Log your reps

Tap the reps or weight to edit the exercise's details. Once a set is done, tap the number on the left to log it; the rest timer will now begin. Once you've finished the full set of reps, you can start the next exercise.

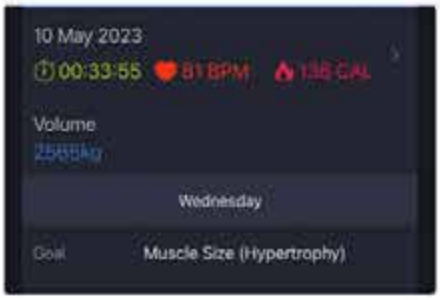
8 Clone a routine

Back on the Routines tab, you'll see a list of all your active routines. Swipe right to left on one to archive or remove it. Tap More to duplicate the routine – this lets you create a similar plan without having to start over.



9 Workout history

Tap the History tab to view your progress over time. You can swipe through the graphs to see when you worked out, your average heart rate, active calories, and workout duration. Tap Monthly Summary for stats.



10 More detail

Summaries of your past workouts are at the bottom of the History tab. Tap one to see workout duration, your heart rate, the exercises you did, and more. Tap the key stats at the top for more detailed charts and info.

11 Explore more

Tap the Explore tab. This contains a huge number of exercises covering different abilities and goals, as well as workouts made for specific sports and activities. You'll need a subscription to access everything.

12 Measure up

The Measures tab lets you enter various stats and measurements about yourself that can be tracked over time in SmartGym. You can import some data from Apple Health, while other figures will need to be entered manually.

Play music using LockPod

Use a widget to control musical playback even when your iPhone is locked

IT WILL TAKE
5 minutes

YOU WILL LEARN
How to add musical Lock Screen widgets to iOS

YOU'LL NEED
LockPod (Free, offers IAPs), iOS 16 or later

It just takes a few quick taps to create your first widget and load it on to your Lock Screen

When iOS 16 debuted, it introduced a feature that let you add widgets to your device's Lock Screen. But if you want to add anything more than a Now Playing widget for your music, you're pretty stumped. Stumped, that is, unless you use LockPod.

This handy little app lets you add your favourite tracks to your Lock Screen, whether that's in the form of playlists, albums, radio stations or local content stored on your device. Getting started is extremely easy, and it just takes a few quick taps to create your first widget and load it on to your Lock Screen. Right now, LockPod works with Apple Music and Spotify, although the developer says more services could be on the way. Apple Music has a few more options inside the app, but we will cover both options here. Whichever service you use, you'll end up with a much more musically functional Lock Screen as a result.

LockPod lets you pick tracks from Apple Music and Spotify at the moment, but could add more services in due course.

LockPod is free to download and use, but it also has an optional premium version. This lets you add custom text and images to each of your widgets and removes the cap on the number of widgets you can create (the free version is limited to one widget). It's not a subscription, though, and you can pay what you want from a choice of different price options.

Now that you're ready, let's dive in and liven up your Lock Screen. **Alex Blake**

Image credits: Apple Inc, Vedant Apps

HOW TO Put music on your Lock Screen

1 Get started

When you first open LockPod, you'll be able to choose between Apple Music and Spotify. Once the app is connected to your chosen service, tap the large blank box on the My Widgets page to create your first widget.

2 Apple Music

If you're using Apple Music, tap Widget Content to tell LockPod whether you'll be picking a playlist, radio station, album or local library item. Below that, you can choose the specific content for the widget.

3 Spotify

Spotify asks you to get the link for your chosen album or playlist. In Spotify, find the item to import and tap the '...' button, then Share > Copy Link. Back in LockPod, paste this link into the Spotify URL box.

4 Start customising

If you've paid for LockPod, you can give your widget a custom name, icon and image. Below this, you can choose to use a circular or rectangular widget and see a preview (for free). When you're done, tap Add Widget.

5 Lock Screen editing

Lock your iPhone, then tap and hold on its Lock Screen. Swipe to the screen you want to edit and tap Customise, then tap the Lock Screen on the left. Tap the widget box under the time to add some LockPod widgets.

6 Place the widget

Select LockPod from the list, then pick either the rectangular or circular shape. Now tap the widget you just placed and tap the name of the widget you want to load onto your Lock Screen. Tap Done when you're finished.

Jargon buster

You can add **widgets** to your Lock Screen from iOS 16 onwards. These show info and let you interact with apps even when your device is locked.

Genius tip!

If you use Apple Music, LockPod can show your currently playing track inside the app. Just tap the banner at the bottom to control playback.

Remove objects from photos

This app's content-aware Erase tool quickly cleans up your snaps

IT WILL TAKE
› 10 minutes

YOU WILL LEARN
› How to use Imgmi's content-aware Erase tool to remove content from photos

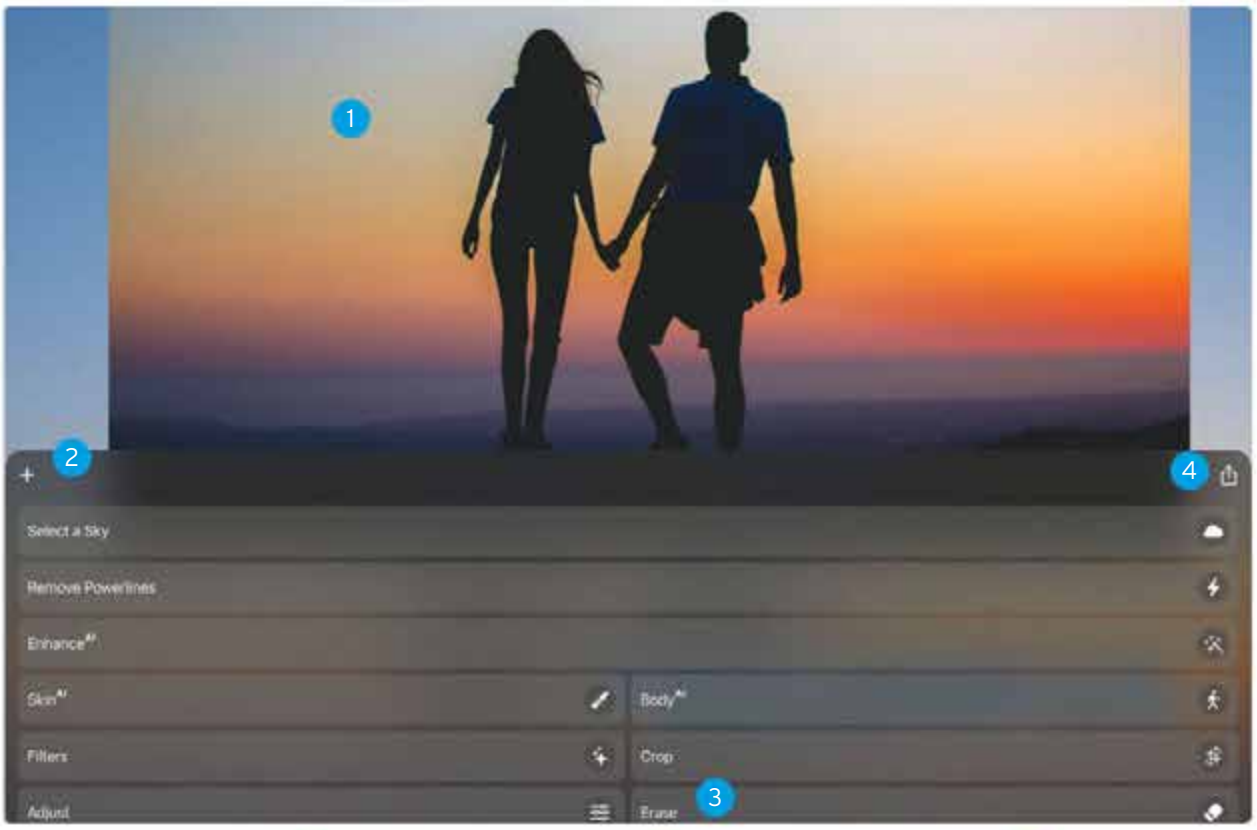
YOU'LL NEED
› Imgmi (From £1.91/month, trial available), iPadOS 15 or later

There are a plethora of image-editing apps on the App Store that claim to use some form of AI to enhance your images, but the tricky-to-pronounce Imgmi has a bit of a pedigree, as it comes from Skylum, maker of the Luminar suite for the Mac that has used neural network smarts for a while now.

Imgmi has a few neat tricks for improving images you've taken on your iPhone or otherwise added to your camera roll. It can replace the sky in a photo in a way that's almost seamless, turning a rainy day to a sunny one, or noon into sunset. There's the ability to remove powerlines from an image, if parallel lines over the sky are ruining your landscape photography, and it has some tools to improve (or at least change) the faces and bodies of your portrait subjects. The app is free, but you can subscribe for more features.

It's the Erase tool that we're going to concentrate on here, however. This acts very much like the Magic Eraser you might have seen in the Google Photos app, allowing you to draw over objects to make them vanish. Here's how it works. **Ian Evenden**

EXPLAINED... The Imgmi interface ›



1 Your image
› The image you're working on is always at the top, and you can pinch to zoom and two-finger drag to move it.

2 New photo
› Click the '+' button to open the file browser and select a new image to work on from your Photos library.

3 Erase tool
› Tap here to open Imgmi's Erase tool, and start brushing away any unwanted objects in your chosen photo.

4 Share
› You can save your edited image back to the Photos app from here, or share it straight to social media.

› **Image credits:** Apple Inc, Skylum Software

HOW TO Remove objects in Imgmi

1 Import an image

Getting your image into Imgmi can be tricky if you've not taken the photo with your iPhone or iPad camera. On opening the app, it offers the Recents album from the Photos app, with the option to switch to others such as Selfies.

2 Google workaround

One way we found to get non-Photos images into the Recents album was to add them to the Google Photos app first, then download them to the device. You can't open images directly in Imgmi from the Files app, unfortunately.

3 Find the tool

Imgmi opens an image in the Sky Replacement tool. To change this, pop up the Tools menu that's almost hidden at the bottom of the interface. A tap on this slides up some options, with Erase at the bottom right.

4 Start erasing

The tool is a simple one, requiring you only to drag your finger over the object you want to remove, then let go. Unlike Google's Magic Eraser, you need to completely cover the interloper rather than circle it.

5 Keep going

It can be tricky to completely remove an object in one go, so you may need to go back over it. This is also true if the result looks unnatural – another fill with the finger can smooth out any patches that have a strange look to them.

6 Touch up with a Pencil

The Apple Pencil, if your device supports it, can be a good way to touch up small areas. The app has a tendency to produce repeating patterns that need to be individually smoothed away, and the Pencil is perfect for this.

7 Adjust the brush size

Additional precision can be achieved using the slider at the bottom of the interface to change the brush size. You can slide it all the way right for filling in large areas, and pull it to the left for detailed masking.

8 Restore if necessary

The opposite of Erase is Restore, which puts back any areas of the image you choose. Using it is as simple as the Erase tool – you select it, and brush over the area you want to restore using your finger or Pencil.

9 Keep it small

Stick to smaller areas if you can. Trying to erase a large area at once leads to more errors, such as the app repeating an object from elsewhere in the image. One way around this is to erase an object in stages.

Master Shortcuts on Watch

Unlock the power of task automation by accessing shortcuts from your wrist

IT WILL TAKE
› 15 minutes

YOU WILL LEARN
› How to find, create, add, run and organise task-speeding shortcuts for your Apple Watch

YOU'LL NEED
› watchOS 7 or later, iOS 12 or later

You've likely come across Shortcuts on the Mac, iPhone and iPad but the ability to trigger specific tasks with ease is also available on the Apple Watch. By adding shortcuts to your wearable, you can trigger a host of actions in an instant without needing to pick up your iPhone. You could quickly calculate a tip, use Shazam to figure out a song's name or even add some 'missing' functions – there's no Notes app but that doesn't mean you can't create and save notes.

In that sense, Shortcuts can unleash the potential of your Apple Watch by allowing most (although not all) iPhone-created shortcuts to work on your wrist.

As you will see, you can make use of them via the Shortcuts app, a complication or an Apple Watch Ultra's Action button. But you can also ask Siri or set up automated shortcuts via the Automation tab in the iOS Shortcuts app, making for a truly hands-free experience. Don't be afraid to play around.
David Crookes

HOW TO Set up shortcuts on Watch ›

1 Launch Shortcuts

Let's start by opening the Shortcuts app on your Apple Watch where you will find a list of available shortcuts created by Apple. To run one, simply tap. Some will just run a process while others will ask for input.

2 Organise your shortcuts

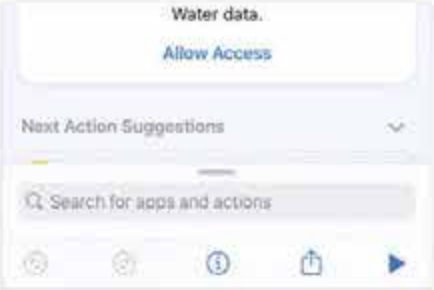
You can reorder and remove your shortcuts. Open the Shortcuts app on your iPhone, tap the Shortcuts tab twice and select Apple Watch. You will again see a list of shortcuts that are available on your Apple Watch.

3 Make your changes

Tap and hold a shortcut. You can now either drag and reposition it or make alterations. Use the menu to rename or edit a shortcut, share or duplicate it, remove it from your Apple Watch or even delete it entirely.

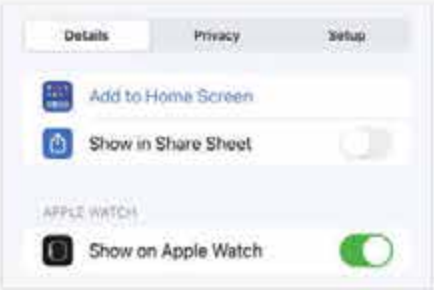
› Image credit: Apple Inc

CONTINUED... Set up shortcuts on Watch >



4 Add some more

You're not limited to those shortcuts. For more, tap the Shortcuts tab in the iPhone Shortcuts app – to view All Shortcuts. If you see one you like, tap its '...' menu for the details screen then tap the 'i' icon .



5 Toggle the button

Activate 'Show on Apple Watch' and select Done in the top-right corner twice (a note beneath the button will tell you if some processes won't run). The shortcut will transfer and appear in the Watch's Shortcuts app.

6 Find shortcuts

If you want to discover and potentially even use more shortcuts, select the Gallery tab in the iPhone Shortcuts app. Tap '+' on a shortcut you want, then head for the Shortcuts app and follow steps 4 and 5 again.

7 Third-party shortcuts

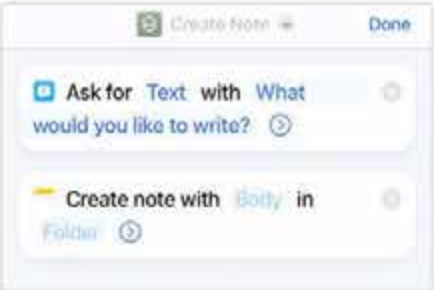
There's a flourishing community of third-party shortcuts (look at reddit.com/r/shortcuts or shortcutsgallery.com). Contacts can share shortcuts too. For safety, open the Settings app on iPhone and tap Shortcuts.

8 Engage security

As well as toggling on Private Sharing, tap Advanced. Determine the level of access shortcuts can have, preventing them from running scripts, sharing large amounts of data and deleting stuff without your permission.

9 Create your own

Want to produce your own shortcut? You'll need to do that in the iPhone Shortcuts app. It warrants an entire tutorial of its own but tap the Shortcuts tab, select '+', tap Add Action and start to build your shortcut.



10 Play around

This shortcut lets you create Notes. It uses the 'Ask for' Input action to get you to write a note, then calls on the Notes app and the Create Note action to save the note. Tap Done, and add like in the steps above.

11 Run from Complications

Want a Shortcut to be available as an Apple Watch face complication? Touch and hold the face, press Edit, swipe left to find the Complications screen, tap a complication and scroll to find the Shortcut you want to use.

12 Use Watch Ultra

Shortcuts can be assigned to the Action button on an Apple Watch Ultra. Open Settings on the watch; tap the Action button, select Action, then tap Shortcut. Tap '<' then Shortcut and the shortcut you'd like to assign.

HOW IT WORKS

Solid-state drives for Mac

They are faster and more reliable but think carefully before splashing the cash

YOU WILL LEARN

How solid-state drives store data, and the things to look out for when buying and using one

SSDs offer a quieter, more reliable and faster way to read and write your data

Key fact

Unlike with a hard drive where defragmenting brings scattered blocks of data together to increase the speed at which they are read, defragging makes absolutely no difference to the performance of an SSD. In fact, defragging an SSD will only increase the number of writes on the drive and this will cause unnecessary wear and tear, reducing its lifespan.

When you buy a new Mac, you can choose how much storage you want. Our advice? Don't rush your decision. While opting for a higher capacity drive is going to cost you hundreds or, in some cases, thousands, making the correct, upfront choice will determine how useful your Mac will be in the future. One thing's for sure, don't bank on going larger later down the line!

Not too long ago, the situation weighed less heavily on your wallet. The choice of high-capacity internal computer storage was generally limited to hard drives (highly-mechanised devices which use a head to read and write data on rapidly spinning discs (aka magnetic coated platters) and they were easier to access and relatively inexpensive compared to the solid-state drives (SSDs) that Apple now places in its modern machines.

Yet there are myriad reasons for why you shouldn't grumble too much about the move towards SSDs. Ever since Apple made them a factory option for internal storage for the MacBook Air in January 2008 – and ditched hard drives for good three years ago – they've offered a quieter, more reliable and faster way to read and write your data. They also generate less heat, draw less juice and offer shorter startup times. But how do they work?

Life ahead

Rather than containing moving parts, SSDs store persistent data in blocks on flash memory chips. This data is saved to individual memory cells, with the number of bits stored on each cell dependent on the type of NAND flash memory being used. A NAND made up of Single Level Cells (SLC) will save one bit of data per cell, for instance, while Multi Level Cells (MLC) save two bits and Triple Level Cells (TLC) save three. All of this is important to some degree because the type can affect how long an SSD lasts. What's more, the larger the capacity, the more time you're going to get out of it.

To explain, SSDs support a limited number of writes – a figure expressed as total bytes written (TBW), at which point degradation kicks in. The more bits that can be written to a cell, the quicker it will wear out (although firmware ensures wear is evenly distributed). Likewise, the more capacity you have, the more cells you have to play with, so, in general, opting for a high-capacity drive with SLCs is

The Mac Studio's SSD delivers up to 7.4GB/sec of performance and offers up to 8TB of storage space.

Image credits: Apple Inc, Micron Technology Inc

How replaceable are the Mac's internal SSDs?

If you have a Mac with a hard drive then it's likely you'll be able to replace it with an internal 2.5-inch SATA SSD. The process is more straightforward with a MacBook and Mac mini than with an iMac (the latter requires cutting the adhesive binding the display from the casing) but, having formatted the SSD using Disk Utility, you can then benefit from faster access speeds.

Sadly, replacing internal SSDs with new ones isn't as straightforward. Macs with the Apple T2 Security Chip and those with M1 and M2 silicon won't let you simply swap out an existing SSD with another. These chips contain the vital storage controllers that indicate where data should be read from and written to and they can't be bypassed.

Frustratingly, you're also limited with the Mac Studio despite its removable SSD. Again, the controller is built into the silicon chip, so you have to change the existing SSD with one that has the same configuration. That's great for replacing a worn SSD but not good if you were hoping to use a larger-capacity drive than you originally paid for.

If you're looking for an external SSD, the Crucial X8 is inexpensive and highly recommended.

going to prove more durable than a low capacity drive with TLCs.

Now, Apple hasn't publicly revealed the type of NAND it uses and we don't know the TBW of its SSDs. Even so, if you opt for a larger internal solid-state drive when buying your Mac, then it should last longer but bear in mind that things are not always quite so straightforward – a couple of years ago, a small number of users of M1 Macs were reporting excessive data writing potentially affecting the SSD's lifespan although a macOS update appeared to resolve this.

It has also emerged that the number of NANDs being used in the SSDs of more recent Macs has been having an adverse effect on performance. The 256GB SSD in an M1 Mac has two NAND chips while the 256GB SSD in the M2 model uses one. As a consequence, the former model is up to 50% faster than the latter but the issue seems more prevalent with base-level storage – higher capacity upgrades appear just as fast as before!

A long road

But that's now. What about the future? Well, there have been some eye-catching advances. Samsung has invested in V-NAND SSDs that stack cells in multiple layers on a single chip so higher capacity SSDs should become commonplace. PCIe 5.0 M.2 SSDs, meanwhile, have proven to be at least two-thirds faster than previous models, plugging into PCIe 5.0 slots currently supported by a handful of PC motherboards. The M1 Ultra-powered 2023 Mac Pro comes with six PCIe 4.0 slots (as well as one PCIe 3.0), so should offer twice the drive speed of the Mac Pro that preceded it.

The 2023 Mac Pro's internal storage can be boosted post purchase using a choice of 2TB, 4TB or 8TB upgrade kits. That's not an option on most other new Macs unfortunately.

There are options for anyone who has nailed down the SSD capacity in their Mac – notably external SSDs. These drives will not only expand storage capacity but also allow you to back up your Mac or quickly transfer data from one computer to another. Just identify how much capacity you'd need (such as twice the storage space of your Mac for backups) and look for sturdy drives with a high TBW that adhere to the IP67 standard, thereby protecting against water and dust.

One thing's for sure, external SSDs are a simple option, connecting via USB-C or Thunderbolt and drawing their power from either port. Thunderbolt support will be available on SSDs for Macs, with the Thunderbolt data transfer protocol speeding up access, while USB-C will be an option on less expensive SSDs. You won't really notice the difference in speed between the two unless working with lots of large media files. What you will notice, however, is the cost. External drives are cheaper than the internal upgrades offered by Apple. They can be used as startup disks too. **David Crookes**

Key fact

› You can use DriveDx (binaryfruit.com/drivedx) to check how much data has been written to a Mac's internal SSD; it will also let you know if the drive is failing. SMARTReporter (corecode.io/smartreporter) does a similar job. If the drive is failing (and your Mac is still under warranty), you should back up the data and pop to an Apple Genius Bar for assistance.

GENIUS TIPS

EDITED BY **HOWARD OAKLEY** >

EXPERT ADVICE

Our resident genius solves your Mac and iOS problems

Contact us

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Version numbering changes

When Apple released Big Sur in 2020 it caught us on the hop, changing macOS version numbering from the chaos of '10.14.6 Supplemental Update 2' to a rational system of three numbers. When your Mac is running 13.3.1 you know it's the first patch of minor version 3 of major release 13, whereas that version of Mojave was really the third 'Supplemental Update' not the second.

Then came the first Rapid Security Response to shatter the peace with its appended letter in parentheses, taking 13.3.1 to 13.3.1 (a). Software expecting to see just numbers and full stops broke immediately, and those wondering how yet another version numbering system works have been left baffled.

Don't even try to make sense of the build number, with three extra digits and the letter a, to go from 22E261 to 22E772610a.

Remove an RSR update

Q After installing a Rapid Security Response (RSR) for Ventura, Safari won't connect to some of my key websites. How can I remove that RSR?

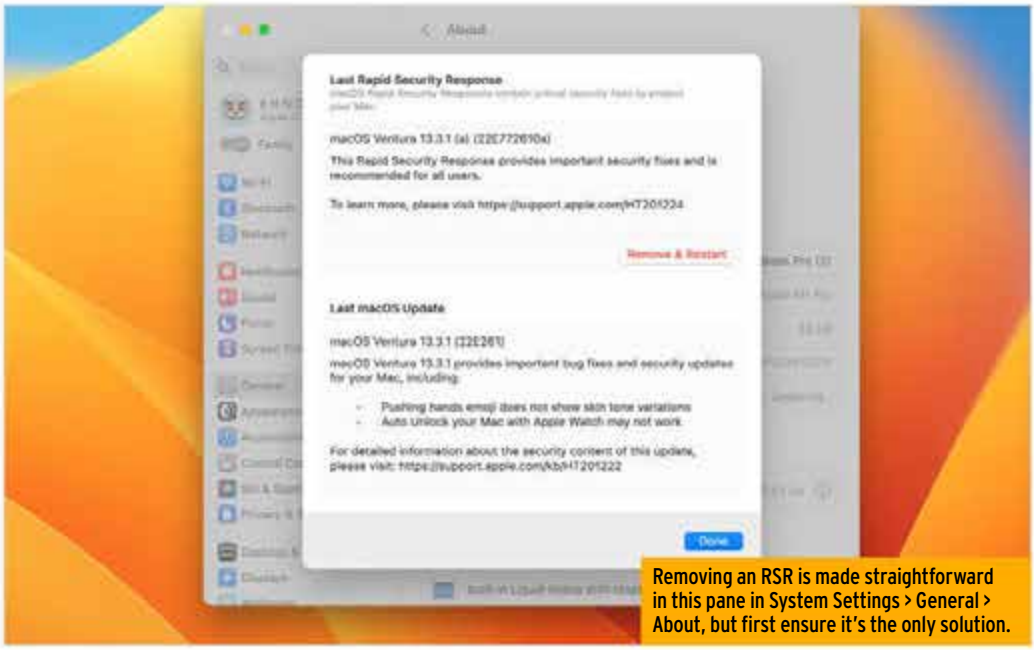
by ALEX WATTS

A RSRs are hot fixes that aren't as thoroughly tested as regular macOS updates, so do carry a risk that they could cause problems for some. To counter that, Apple makes them easily uninstallable.

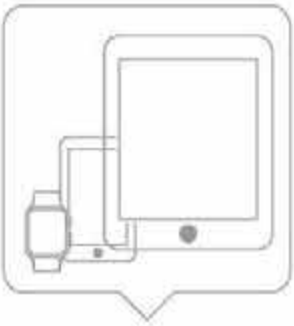
Before deciding that's your best solution, see if you can settle those problems. If your Mac hasn't started up since installing the RSR, restart it, as that can make some issues vanish. If they persist, start your Mac up in Safe mode, leave it running for a couple of minutes, then restart back into normal mode.

If after trying those the problems remain sufficiently obstructive that you still want to remove the RSR, open System Settings > General > About and locate the box giving the macOS version, which now has a letter after the version number. Click on the Info tool to the right of that number, and in the dialog click on the Remove & Restart button. Your Mac should then revert to its former self, with the whole of that RSR removed, once it has restarted.

As the fixes provided in RSRs will be incorporated into the next macOS update, be extra vigilant until Apple releases that and it's installed on your Mac.



Removing an RSR is made straightforward in this pane in System Settings > General > About, but first ensure it's the only solution.



iOS software

Swipe away your touchscreen troubles and rekindle your love of Apple's mobile devices

Quick-fire questions

How to uninstall a troublesome Security Response?

Firstly, shut your iPhone down, leave it a minute, and start it up again, in case that fixes things. To remove the RSR, go to Settings > General > About > iOS Version, and tap Remove Security Response. Once it's gone, your iPhone should restart automatically.

How to share my iPhone's hotspot with my family?

This is controlled not in Settings > Family, but through Personal Hotspot > Family Sharing instead. It only applies to those in your iCloud Family, and gives you the option for each share request to require your approval, or simply to share the hotspot with them automatically, without their having to enter the hotspot password each time.

Unscramble and share Wi-Fi passwords

Q The saved Wi-Fi passwords on my iPhone got muddled when updating to iOS 16.4.1. How can I set them right and then share them with others?

by RICHARD MAYNARD

A Apple devices manage their Wi-Fi passwords separately from those used in Safari as shown in Settings > Passwords, and normally hide those for networks the device can't currently see. To view and manage all those your device has remembered, open Settings > Wi-Fi then tap Edit at the top right; that requires either Face ID or Touch ID. If you share your keychain in iCloud, that list should give access to those known to other devices and Macs sharing that keychain.

Recent versions of iOS and iPadOS offer a neat way to share the password of the Wi-Fi network your device is currently connected to, provided both are signed into iCloud, have one another's Apple ID email addresses saved in Contacts, have Bluetooth turned on, and Personal Hotspot disabled. This is explained at bit.ly/mac393wifishare.

You may find it simpler and less fiddly just to send the password using Messages. Open the network settings, either for a network available locally, or one on the list of all networks. Tap on the obscured password to reveal the Copy command, then switch to Messages and paste it in your message there. Once the recipient has inserted that password, you should both delete that message for security.

If your devices share their keychain with a Mac, you can use Keychain Access from Applications > Utilities to look for AirPort Network Passwords and manage and edit them there.

Tap an obscured password to reveal it and the command to copy it from there into a message or email.

Email your queries and your questions to **genius@macformat.com**

Mac hardware

We help to solve your hardware hassles, from interrupted upgrades to running diagnostics

Quick-fire questions

Which external GPUs work with Apple silicon Macs?

› None, because its GPU is integrated into the chip, where it shares Unified Memory with the processor. As an eGPU can't share that memory, Apple would need to design in support for that. Even with Intel Macs, there are limits to support detailed at bit.ly/mac393egpu.

Can I upgrade my Mac Studio M1 Max to M1 Ultra?

› Apple shows no sign of offering such hardware upgrades. With the introduction of self-repair in many countries, it could be possible to order a replacement Ultra logic board and fit it yourself. However, parts are ordered against the Mac's serial number, so cheating doesn't look possible, and would be expensive and difficult.

Prepare an internal drive for recycling

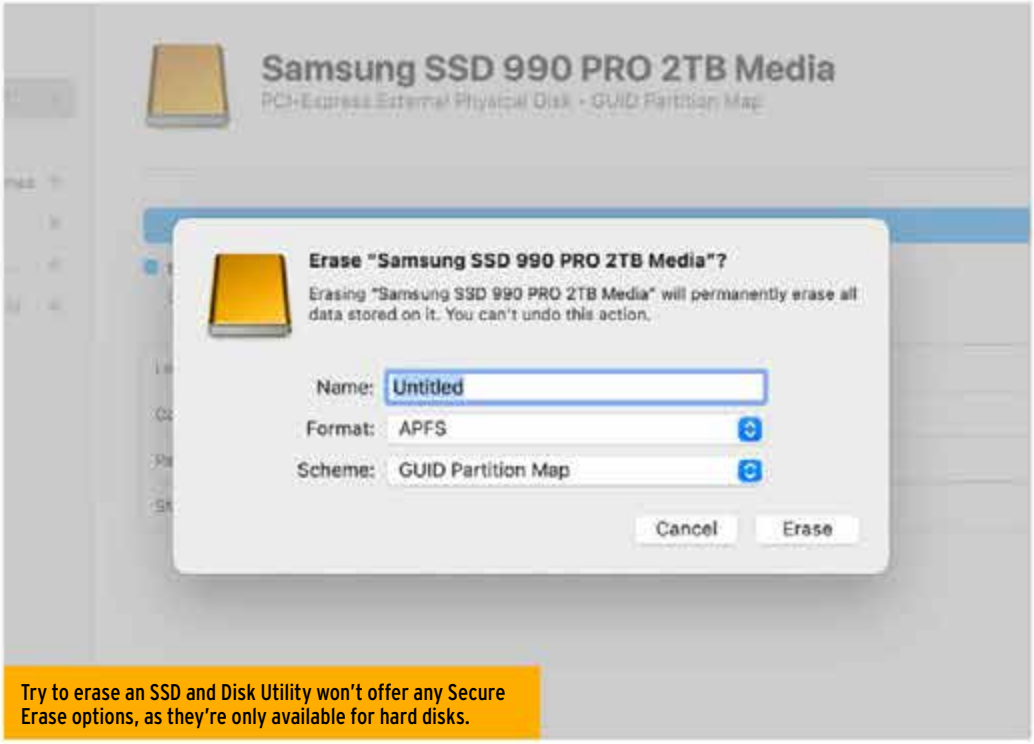
Q How should a friend dispose of his old iMac, to ensure that there's no data available from it when it goes for recycling?

by ROY MILLINGTON

A Before he starts cleaning its internal storage, there's a list of essential tasks to work through once that Mac has been thoroughly backed up and its contents preserved reliably. Apple silicon Macs and those with T2 chips can do those quickly and cleanly using the Erase All Content and Settings feature in System Settings › General › Transfer or Reset, but they have to be performed manually on older models.

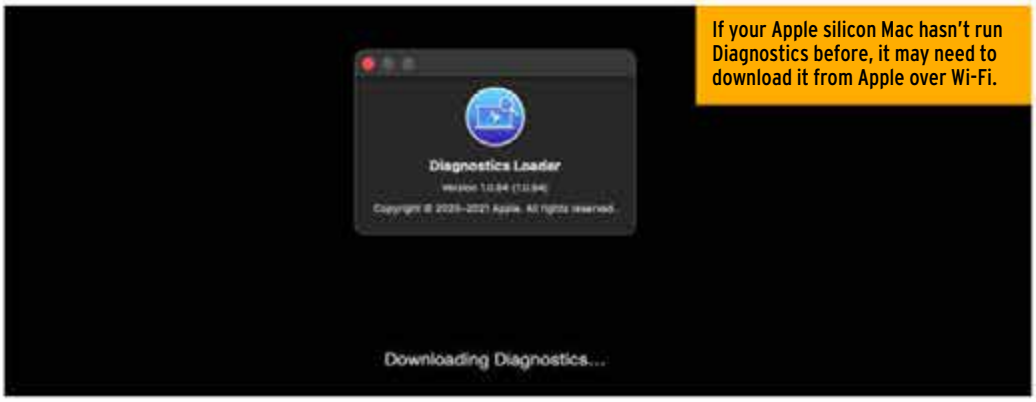
First disable Find My Mac and Activation Lock, and deauthorise it for iTunes. Next sign out of iCloud and iMessage. Disable any firmware password, reset the NVRAM, unpair all Bluetooth devices, and finally remove that Mac from the list of hardware in the Apple ID pane on the owner's other Mac, or its equivalent in a device's Settings. Those steps are detailed at bit.ly/mac393tradein.

Once those have been done, an internal hard drive should be securely erased using Disk Utility in Recovery mode, or when started up from an external drive. It's normally only necessary to use either of the two faster options for that. Unfortunately, SSDs aren't suitable for that and should just be erased normally. Then shut the Mac down, disconnect it from all power, and open it up to remove its internal storage. Physically destroy that using a hefty hammer, nail, drill, or whatever. They can prove quite tough, but it's a wonderful feeling and well worth the effort.



Try to erase an SSD and Disk Utility won't offer any Secure Erase options, as they're only available for hard disks.

› Email your queries and your questions to genius@macformat.com



If your Apple silicon Mac hasn't run Diagnostics before, it may need to download it from Apple over Wi-Fi.

Diagnose a flashing display

Q The display of my M1 MacBook Pro 13-inch has begun flashing during startup, but then works fine. How can I tell whether it's faulty?

by JEFF LONG

A With their integrated graphics processing, Apple silicon Macs are less prone to hardware problems than older Macs with separate graphics cards. Test this using Diagnostics from Recovery mode.

Ensure your Mac has a good Wi-Fi connection, as it may need to download the diagnostics software from Apple, then shut it down. When you press its Power button to start it up, keep pressing until it shows its loading Options. Once that has loaded, press and hold Cmd+D until you're told that Diagnostics is loading, then select your language for the loader app to run and offer Diagnostics.

Once it has finished, you'll get a code you can look up. You could also run extended diagnostics by pressing Cmd+E, but that's undocumented and may not provide different tests. If those fail to find a hardware problem, then its most probable this is just a quirk of the startup process.

Which Apple power adaptors work with Macs?

› Apple's guide is at bit.ly/mac393poweradaptor. You can interchange recent USB-C adaptors, picking the newest when available. MagSafe is more complicated, as versions 1 and 2 can be interchanged using an adaptor, but not MagSafe 3.

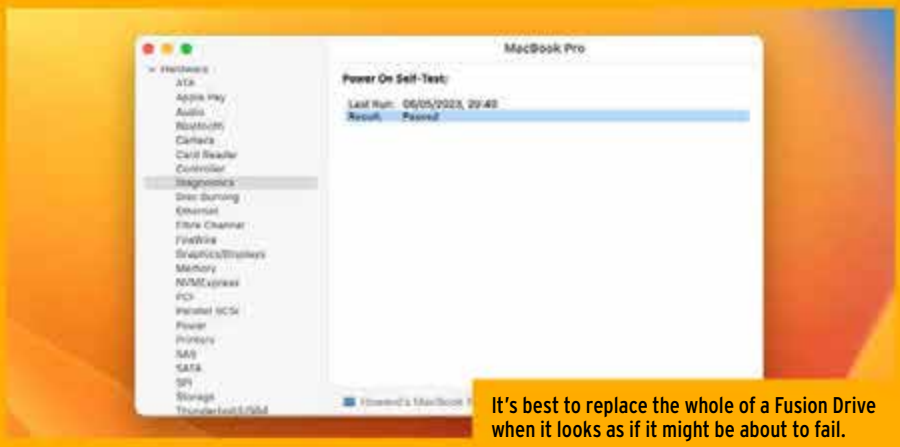
Do Macs check their memory when they power up?

› Yes, all Macs complete a power-on self test (POST) before starting to boot, although only Intel models report results of the last in System Information, in Diagnostics under Hardware. If you suspect a memory problem, running full Diagnostics is more thorough.

Fusion Drive reports errors

Q The Fusion Drive in my iMac keeps throwing errors, as if it's about to fail. Can I split it and carry on using its SSD, or should I get it replaced?

by TIM BRENT



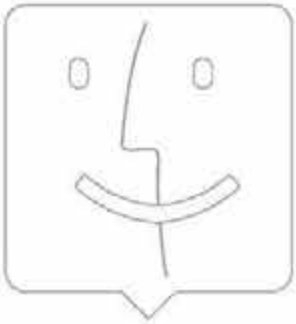
It's best to replace the whole of a Fusion Drive when it looks as if it might be about to fail.

A When you suspect a Mac's internal storage might be failing, keep good backups without putting any more stress on the drive. While macOS Diagnostics and third-party disk health apps could provide more details, errors are a good reason for taking early action to replace any Fusion Drive before it gives up the ghost.

Fusion Drives consist of a smaller SSD alongside a larger hard disk, held together using Core Storage software. Splitting them can only be performed using the diskutil command in Terminal, and destroys all the data on both of them. As the SSD is also likely to be showing signs of age, it's normally better to have them both replaced, ideally with a new SSD if you can afford it. In most Macs that involves plenty of fiddly disassembly and is best left to an experienced technician.

As your iMac doesn't have a T2 chip, another option is to replace the Fusion Drive with a small hard drive just for emergencies, and to start up and run your Mac from an external SSD, which is still likely to perform better than its original internal storage.

› Email your queries and your questions to **genius@macformat.com**



macOS

Shine a spotlight on the solutions to your most irritating Mac problems

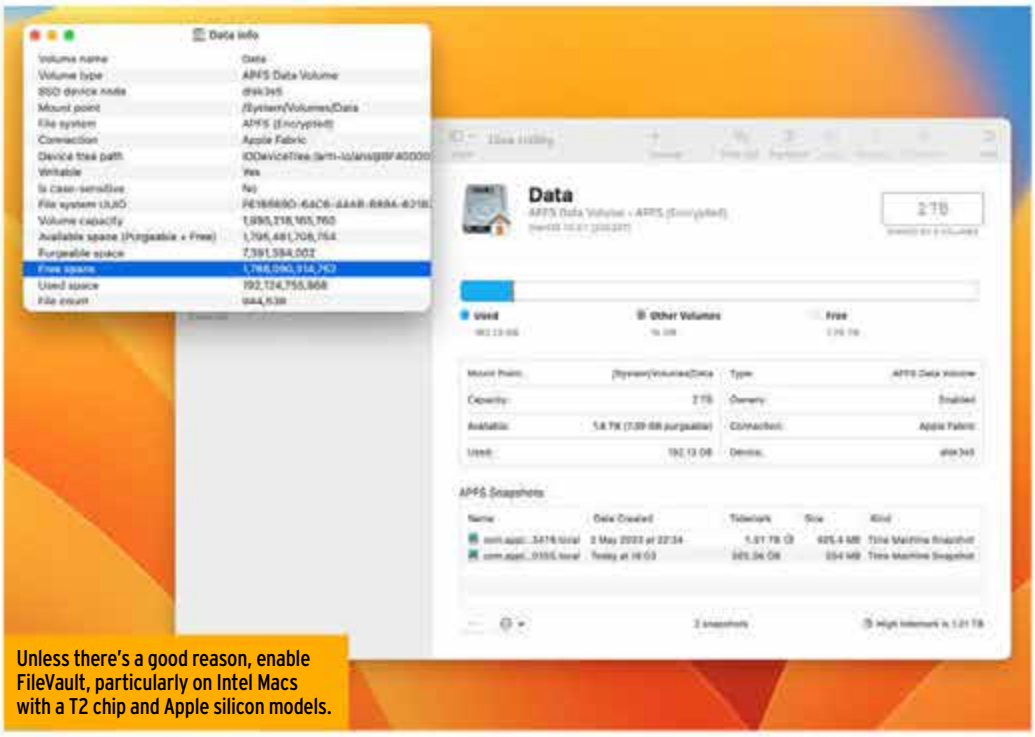
Quick-fire questions

How to change the password of a sparse bundle?

A bug was introduced around macOS 13.3 that stopped changing passwords of sparse bundles using 'hdiutil chpass', although it still works fine with other types of disk image. Until a fix, the only way to change a password is using 'hdiutil' in a virtual machine running 13.2 or earlier.

Does macOS Big Sur check itself for malware?

Yes. On-demand checks are run as part of Gatekeeper on quarantined apps; it also runs anti-malware scans at least once a day using new XProtect Remediator software. Although the checks are the same as in Ventura, the newer macOS runs on-demand checks more frequently than in Big Sur.



Unless there's a good reason, enable FileVault, particularly on Intel Macs with a T2 chip and Apple silicon models.

How much space is really free?

Q My M1 Mac mini is running short of internal storage. With free space at a premium, the Finder and Disk Utility often differ on what they claim is available. Which should I believe?

by DON PHILLIPS

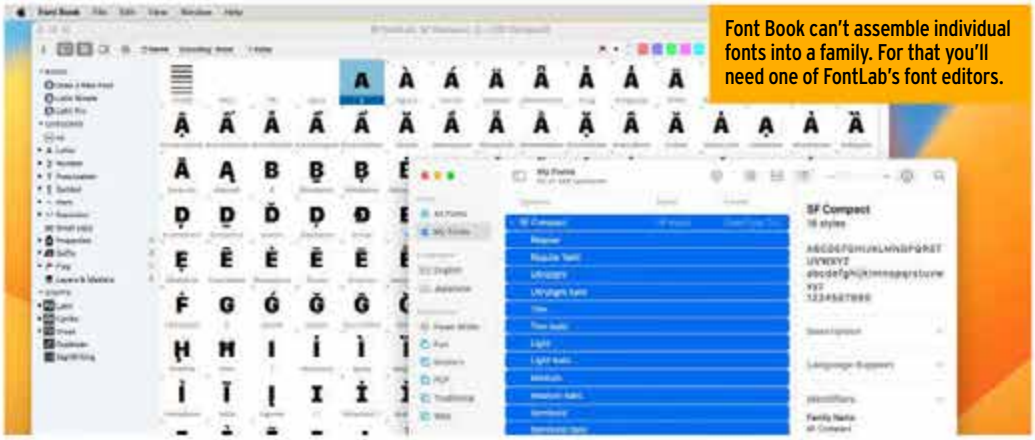
A If you need to know accurate figures for free or used disk space, trust those provided by Disk Utility, not the Finder, because of the way they obtain them. Select any disk or volume in Disk Utility, and the app gets a fresh estimate from macOS for each of the figures it displays.

The Finder, on the other hand, merely tells you the last figures it was updated with, which could be from 10 or more minutes ago, and there's no way you can force it to update them with more recent info.

The figures themselves aren't as straightforward as they appear: what's shown as Available isn't actually free at that moment, but what macOS could make available if it really needed to. To achieve that, it would need to free all that is shown as being Purgeable, largely by clearing out hidden caches. That can sometimes include space being used for the storage of data for snapshots, but doesn't normally include what could freed by evicting iCloud files and data from local storage, which macOS can do if Optimise Storage is enabled in iCloud settings.

A more reliable estimate of the minimum free space available is given as Free Space when you select a volume and click on the Info tool in Disk Utility, as that doesn't include Purgeable space, so is usually significantly less than that given as Available.

Email your queries and your questions to genius@macformat.com



Font Book can't assemble individual fonts into a family. For that you'll need one of FontLab's font editors.

Put fonts into a family

Q I tried to install two font families, but they appear in Font Book as individual fonts instead. How can I turn them into the families I want?

by WES FITZGERALD

A For a group of fonts to be recognised by macOS as a family, they need to be structured and installed as one, although normally spread across multiple files. If Font Book doesn't recognise them as a family, then all it can do is put them into a collection, which works differently. Key to any font family is its common typographic name, and within each family, individual style names. If those fonts haven't come as a family, you'll need a proper font editor to build them into one. Try FontLab's TransType from bit.ly/mac393transtype for $97 (about £100) – it does have a trial period, so you should be able to test the app out first. The way that it builds individual fonts into families is explained in full at bit.ly/mac393fontfamilies.

Once you've made the families, uninstall the existing single fonts and install the families. To rebuild font caches, start your Mac up in Safe mode, leave it a couple of minutes, then restart it into normal mode.

Why has eficheck stopped working in macOS Ventura?

› eficheck should still run its silent weekly check on the integrity of your Mac's firmware, but because of security changes in macOS 13, it may not work when you run a check in Terminal yourself. This should be fixed in the macOS 13.5 update.

Does Safe mode check the boot disk for errors?

› According to Apple it runs a quick check of volumes in the current boot volume group, although it doesn't report the result anywhere accessible, and doesn't check snapshots. You're better off doing this yourself in Disk Utility in Recovery mode.

Deduplication may not free space

Q I've tried using various apps to find and remove duplicate files, but they seldom seem to free up much space as a result. Why not?

by CHARLIE ROSS

A The success of what's known as deduplication depends on whether the files are copies of one another, or clones. Before APFS arrived in High Sierra, clone files didn't exist in macOS: when you duplicated or copied any file, a copy of the original was made, so requiring twice the disk space.

APFS now tries to make a clone file whenever it can, although that can't work across different volumes. Instead of two clone files occupying twice the space of one, they share the same data at first, so take no additional space at all. As they're changed, they take up more storage until they eventually become completely separate and require their full size.

Although the Finder claims this folder of APFS clone files takes 50GB, it takes no space at all, as they share data.

Because of this, if a third-party utility removes one of a pair of clone files, no disk space is recovered. Some replace a pair of identical files with clones, but if the originals were already cloned, that doesn't change the amount of space they occupy either.

When you first check a drive that's come from an older Mac and wasn't used much in APFS, deduplicators can save significant amounts of space. But the more that drive has been used in APFS format, the more duplicates will be clones, and the quantity recovered therefore falls until the procedure is no longer worthwhile.

› Email your queries and your questions to **genius@macformat.com**

Breathe new life into your old Mac

Does your Mac sigh when it starts or creak when it calculates? We're here to help

Written by **Carrie Marshall**

With the weekly shop costing more than a car and everything from energy to entertainment suppliers charging eye-watering prices, many of us are choosing to hang on to our Macs for a little bit longer. And that's a wise choice, because with a little bit of TLC, Macs can last for a very long time. With some Macs, inexpensive hardware upgrades can deliver a serious speed boost – and with all Macs, a bit of tinkering and a few alternative apps can make a massive difference too.

It's important to be realistic, of course. macOS Ventura won't run on a Power Mac G4 and you won't get M2-beating performance from the 667MHz processor of a 2006 aluminium MacBook Pro. But pretty much any Mac of relatively recent vintage can be tweaked, given extra storage and in many cases given more memory too.

In this feature, we'll breathe new life into all kinds of Macs. We'll discover how to safely install the macOS versions Apple doesn't want your Mac to run, and we'll also take a look at the apps you can use if Apple's own apps are no longer being updated for your system – in most cases, without you having to spend any money at all. And we'll discover the tools you can use to access files from long-gone apps too.

That's not all. We'll show you how to make a clean installation of macOS to clear out the electronic lint that every computer accumulates, and we'll take you through the process of swapping out your storage or boosting your RAM – something that's pretty much impossible on the most modern Macs but pretty straightforward and very affordable for older ones.

We'll also show you some fun stuff, such as the emulators that enable you to experience or revisit the Macs, the apps and even the games of the 80s and 90s.

Image credit: Apple Inc

Patch your Mac

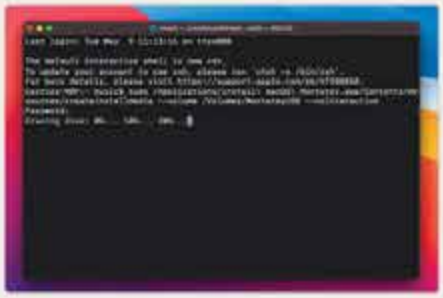
Keep your Mac up to date, even when official support stops

One of the most important things you can do with your Mac is keep it up to date, and for current versions of macOS and Mac apps that's usually straightforward: just ensure automatic software updates are available for both your operating system and your apps and you're good to go. But things become more complex with older software, such as operating systems that Apple no longer supports or apps that the developer doesn't. In some cases, you can find an alternative to now-defunct apps, but what if you need to access files made in an app that Apple no longer lets you run?

Apple may have locked out 32-bit apps in macOS 10.15 (Catalina) but you can still run them in emulators such as WINE, Parallels, VirtualBox or Retroactive (github.com/cormiertyshawn895/Retroactive). That last one's particularly great for creative types who need to open files from apps such as Logic Pro 9, iPhoto or Aperture on modern Macs.

If you really want to kick it old school, you can emulate old Macs on modern ones via Mini vMac (gryphel.com), which emulates a Mac Plus, or emulate other PowerPC Macs in SheepShaver (sheepshaver.cebix.net) or QEMU (qemu.org). As for the old apps, you can get them from the Macintosh Repository (macintoshrepository.org).

HOW TO Create a clean install of macOS ›



1 Back up your Mac

We can't stress this enough: make sure that you have a full backup of everything you want to keep on your Mac, because we're going to do what's called a clean install – that's when you create a factory-fresh version of macOS.

2 Download macOS

We need the macOS installer from the Mac App Store. Unfortunately, a bug means the download often fails for Big Sur. To get around that, launch Terminal and enter: softwareupdate --fetch-full-installer to download the installer.

3 Plug in baby

Now make a USB bootable installer. For that, you need a 16GB or larger USB flash drive and the macOS installer. The latter must be in your Applications folder. Plug in the USB flash drive; if you've closed Terminal, open it again.

Top 10 apps for older Macs

Firefox

› Free › mozilla.org

› The free Firefox browser is one of the most powerful, privacy protecting and flexible web browsers on any operating system, and it's available for every macOS from Sierra onwards. Its available extensions and add-ons massively outnumber Safari's ones.

Thunderbird

› Free › thunderbird.net

› This fast, free alternative to Mail works with macOS going back to Sierra and has very small system requirements. It looks and feels pretty retro but it's a very powerful app with lots of customisation options.

GIMP

› Free › gimp.org

› It's a little harder to learn than Photoshop or Affinity but GIMP delivers serious photo and image editing power for zero money. Versions since 2.8.2 run natively in macOS without additional software, and they're made for Macs running Sierra onwards.

LibreOffice

› Free › libreoffice.org

› If you have Mojave or later, you can run this free alternative to Microsoft Office, which is based on the solid (if fairly dated-looking) foundation of OpenOffice and delivers an impressive collection of writing, spreadsheet and productivity features.

VOX Player

› Free › vox.rocks

› This hi-res music player works on macOS El Capitan onwards and supports all the key formats including FLAC, Apple Lossless and more. It works with your iTunes music library and also provides thousands of online radio stations. It's a great Music alternative.

Image credits: Apple Inc, Mozilla Corp, MZLA Technologies Corp, The GIMP Team , Creative Commons, Coppertino inc

HOW TO Create a clean install of macOS ›

4 Make some tea

Press Enter and do something else for a bit: this step takes some time. Terminal will keep you updated about its progress until the bootable USB drive has been created. You can then quit Terminal and shut down your Mac.

5 Reboot your Mac

Restart your Mac and if it's an Intel one, hold down Opt until you see the boot options menu; on an M-powered Mac, press and hold the Power button until the menu appears. On either kind of Mac, you should see the macOS Utilities screen.

6 Change security settings

On some M-powered Macs you may get a security error. Reboot your Mac, hold down Cmd+R for Recovery mode, select Utilities › Startup Security Utility and enable Allow Booting From External Media. Retry step 5.

7 Erase your Mac

Select Disk Utility from the options, choose Macintosh HD (or whatever you want your main drive to be called) as the disk name and select APFS as the file system. Now choose Erase. Note: This removes everything from your drive.

8 Install macOS

Once Disk Utility has finished formatting your main drive, you can quit Disk Utility. This will take you back to the macOS Utilities screen. You can choose the 'Install macOS' option by selecting the bootable USB drive from the options.

9 Start from scratch

Congratulations: you now have a pristine copy of macOS, free from the chaff that accumulates in any operating system over time. All you need to do now is restore your apps and files from your backup and pick up where you left off.

SimpleNote

› Free / IAPs › simplenote.com

› Made for macOS Mojave or later, this streamlined note-taking app is more powerful than it looks: it supports Markdown formatting so it's as much a writing environment as a Notes alternative. SimpleNote also offers an iPhone/iPad app with built-in syncing.

VLC Media Player

› Free › videolan.org

› The free VLC Media Player is much more flexible than either Apple's own TV app or QuickTime Player: it supports every conceivable kind of media file and has a dizzying range of audio and video filters. It's also very fast, even on very modest Macs.

VueScan

› £24.95 › hamrick.com

› Has Apple stopped supporting your scanner in macOS? Don't worry: VueScan will almost certainly have it in its massive library, even if it's ancient. It supports over 7,100 scanners from 42 manufacturers and makes it easy to scan documents and photos.

Alfred

› Free › alfredapp.com

› Spotlight is great, but Alfred can do even more than finding things and launching apps. It's available for Mojave onwards (version 4 is available for El Capitan) and enables you to do all kinds of things including automating everyday tasks and actions.

1Password

› Free › 1password.com

› Apple's iCloud Keychain app is great for storing your logins, but it doesn't work with non-Apple apps. 1Password does, and it supports not just non-Apple browsers like Firefox but also non-Apple devices, so you can take all your passwords to PCs too.

Image credits: Apple Inc, Automattic Inc, VideoLAN/Richard Øiestad, Hamrick Software, Running with Crayons Ltd, 1Password

Beef up your Mac

Giving older Macs a speed boost isn't as hard as you might think

Today's Macs aren't very upgradeable, especially if they run Apple silicon: on an M1 or M2 chip, the graphics, memory and processor are all on the same, non-replaceable chip and the SSD is not user accessible or replaceable. But older Macs are much more accommodating and Intel-based Macs are relatively easy to upgrade.

With memory upgrades you'll need to know not just the supported maximum memory but the type of RAM too and what configurations your particular Mac supports. Many manufacturers will help you with this, so for example crucial.com has a good memory finder for Macs.

As you'll see from these examples, upgrading your Mac is a little fiddly but it's not too difficult providing you have the right tools. Those tools will typically include a small Phillips screwdriver and, for later model Intel Macs, a selection of small Torx screwdrivers too. Keep the tools away from your Mac until you've unplugged it from the mains.

Can iFixit? Yes you can!

We love ifixit.com: its upgrade kits don't just give you the part(s) you need, but also the myriad screwdrivers and other tools required to make your Mac upgrade or repair as effortless as possible. And you don't need to buy their upgrade kits to benefit from their Mac hardware expertise – their excellent online guides are free to read or to watch.

HOW TO Upgrade your memory

1 Remove the cover

Every Mac's different but, for example, here on a mid-2012 13-inch MacBook Pro, there are 10 external screws of differing sizes to remove before you can prise open the lower case of your Mac.

2 Disconnect the battery

You know not to open up a Mac without first unplugging it from the mains, but with portable Macs such as MacBooks you also need to disconnect (or remove, on older Mac laptops) the battery.

3 Replace the RAM

The memory chips on this Mac (and on iMacs of similar vintage) are held in place by little retaining arms that you'll need to gently pull apart before you can slide out the RAM, swap in the new chips and reconnect the battery.

Image credits: Apple Inc, ifixit.com

HOW TO Upgrade your storage drive ›

1 Keep the battery clear

As with RAM replacement, step one is to open up your (disconnected) Mac and unplug the battery connector. It's a good idea to gently bend the battery connector back on models such as this 13-inch MacBook Pro so it won't reconnect.

2 Extract the old drive

On this Mac, the hard drive is secured by two Phillips screws and then a bracket, shown here. You'll need to take that out and gently lift out the hard drive by its pull tab; disconnect its cable and remove the drive completely.

3 Take the posts

There are four retaining posts on the hard drive, two on either side, with 6mm T6 Torx screws. You'll need to transfer them across to your new drive or it won't sit properly inside your Mac. Once everything's in place, install macOS.

HOW TO Upgrade your SSD ›

1 Open it up

Early Mac SSDs were fast but limited in storage space, so many of us quickly ran out of room. Don't worry, you don't need to carry a brace of external drives around; simply pop open your Mac and swap the SSD for something more roomy.

2 Unplug the battery

Retina MacBooks aren't hugely accessible but it's easy enough to locate and unplug the battery connector shown here. Don't do anything else until the battery has been disconnected and moved gently out of the way.

3 Swap the SSD

The SSD is held in with a single Torx screw. Unscrew it, then gently lift the free end of the SSD about half a centimetre; you should be able to pull it out of its socket. The new SSD goes in the same place, secured with the same screw.

Think outside the box

If you can't upgrade your Intel Mac's hard drive to the size or speed you want, don't worry: just go outside. By booting from a fast external solid-state drive (SSD) instead of a relatively slow hard disk you can make a real difference to your Mac's performance.

The important thing here is the connection and file format. USB 2.0 connections just aren't fast enough – you need USB 3.2 or Thunderbolt and a compatible drive – and you need to choose the right format. For macOS Sierra onwards, APFS is the best and fastest option; for older Macs, go for Mac OS Extended, aka HFS+. You can format the drive in Disk Utility, then select it as your destination disk during the macOS installation. You can change your startup disk by going to the Apple menu; choose System Settings › General › Startup Disk. Apple has more details at tinyurl.com/exmacssd.

Image credits: ifixit.com, LaCie

Run the latest macOS on older Macs

No support? No problem. OpenCore Legacy Patcher is here to help

Have a 2017 MacBook Air and want Ventura on it? Sorry, you're out of luck: it, and all Macs made before 2017, aren't supported. So why does Apple end OS support for perfectly good computers?

Part of the answer is undoubtedly to sell new Macs. But there are more important factors here. Operating systems can encounter issues with new software or newly discovered security flaws, and fixing those issues costs money. And then there are device drivers, the little bits of code that enable your Mac to talk to crucial components that are often made by third parties – AMD or Intel for GPUs, Broadcom for Wi-Fi radios and so on. Those third parties don't keep updating their drivers forever, and when their updates stop that threatens the stability and safety of macOS. Few manufacturers will happily pay to patch their OSes in perpetuity. Some Android firms only promise OS updates for two years from launch, so Apple's six-ish years is positively generous by comparison.

What is OpenCore?

OpenCore is a boot manager, a piece of software that sits between your Mac hardware and your macOS software and performs clever tricks to enable officially forbidden versions of macOS to load and run properly on your computer. It does that by injecting and patching data to deliver as close to a fully native macOS experience as possible.

HOW TO Create the macOS installer

1 Get the patcher

The first thing you need to do is download OpenCore-Patcher (GUI) from dortania.github.io/OpenCore-Legacy-Patcher. Once it's downloaded, run the app and you should now see a window like this one.

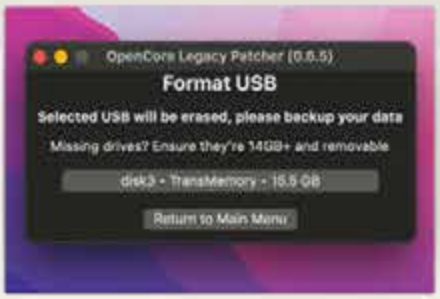
2 Create the installer

Click on 'Create macOS Installer' and you'll be given a choice of using an existing installer or downloading it. Go for the download option as this will ensure you get the most up-to-date version of macOS for your Mac.

3 Pick your macOS

As you can see, we have three choices here. We want the most recent one, which is the one with the highest version number; at the time of this screenshot that means the latest Ventura build, which was 13.3.1.

HOW TO Download and install macOS Ventura



1 Make more tea

This is another big download: this installer is nearly 12GB, and it can be very slow to download. Wait until you're sure the download has started – the MB downloaded number will start to rise – and then go and do something else.

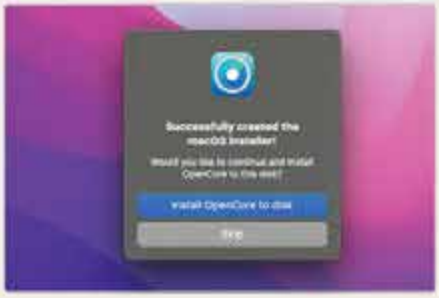
2 Add your USB

You'll need a 14GB or larger USB drive for this next bit, so insert that into your Mac's USB port once the installer has downloaded. You'll now see a list of available USB drives – in this case, we just have the one.

3 Flash the drive

OpenCore-Patcher will now turn your USB stick into a bootable macOS installation drive. You can't skip or speed up this step, so unfortunately that means another wait – especially on older, slower USB flash drives.

HOW TO Get Ventura up and running



1 Install OpenCore to disk

At the moment all you have is a macOS installer. You also need OpenCore to trick your Mac into letting it run when it's not officially supported, so you need to click on 'Install OpenCore to disk' here. If you don't, your installation won't work.

2 Reboot your Mac

Restart your Mac with the Opt key held down until you see this boot screen. Don't click on 'Install macOS Ventura' just yet; you need to use the next option, EFI Boot. That's the bit that persuades your Mac to let Ventura on board.

3 Install Ventura

Running the EFI Boot option moves OpenCore into memory, so now you can choose the Install macOS Ventura option. This will work like any normal macOS installation. If you encounter issues, there's help on the OpenCore site.

If seeing this boot screen strikes terror into your heart, a bootloader is probably not for you.

Brickbats and caveats

It's very important that you understand the limitations of a bootloader such as OpenCore. The first and most obvious one is that it comes without a warranty or support, so if it goes horribly wrong – something that's unlikely but still possible – and bricks your Mac, you're on your own. The second is that Apple may (and likely will) decide to block it. And the third is that you're letting someone else play god with your Mac, and that someone else doesn't have Apple's resources to find and fix any security issues or massive bugs that might occur. If that sounds a bit scary, then a bootloader is not the right solution for you.

Image credits: Apple Inc, Dortania

Give your Mac a second life

Don't just dump an old Mac: Think Different!

There's a trope in TV dramas where doctors or paramedics battle off-screen to save a beloved character before returning to break the bad news to their loved ones: "We did everything we could," they'll say, "but it just wasn't enough." It's a bit like that with some Macs, albeit with less tears or cheesy acting. But just because an old Mac is on its way out doesn't mean it can't live on in our hearts, or as part of our home decor. It turns out there's an awful lot you can do with an old Mac, even if it's completely stopped working.

If your Mac is old rather than broken, one thing you can do is run a different OS on it – either through emulating an old macOS or by installing, say, Chrome or Linux. A lot of old Macs are doing sterling service today as networked drives and/or media streamers, and others have gone on to new lives thanks to computer charities. And if all else fails, you can even make your Mac into a clock, a coffee table or a makeup mirror. All you need is a Mac and a little bit of imagination.

Stream from it

› Streaming on a home network isn't particularly demanding, and that means old Macs can easily be redeployed as streaming servers. One of the simplest options is the free, polished and popular Plex Media Server. It can turn any Mac running macOS 10.12 (High Sierra) or later into the hub of your home entertainment, streaming from a variety of online services as well as from your own digital library of music and video.

Sell it

› ebay.co.uk

› Don't expect to make huge sums unless you're selling an unopened first-gen iPhone. But there are still plenty of Mac enthusiasts who'll be happy to buy your old Mac. Don't forget about shipping costs, though: a Power Mac is going to need more than a few stamps to get it to its destination. We'd recommend trying Facebook Marketplace, Gumtree and other local marketplace services first before going on eBay.

Donate it

› If you're a power user, a Mac that's no longer powerful enough for what you do might still be perfectly powerful for less demanding tasks: you don't need to have an M3 processor for a bit of word processing, letter writing or online shopping. There are lots of charities that'll take working computers, but make sure you wipe all your personal data before you hand it over – 'Erase it' on the next page tells you how.

› Image credits: Apple Inc, Plex, eBay Inc, The Turing Trust

Erase it

Many of the suggestions here involve passing your old Mac on to somebody else, whether that's to a friend, to a marketplace or auction buyer or to a charity. If you're doing any of those things, or getting rid of your Mac via recycling, it's crucial that you wipe your Mac first to ensure that your personal data and documents can't be accessed by anybody else.

Although there are third party apps to do that for you, Apple silicon Macs running macOS Monterey or Ventura have built-in tools under System Preferences / System Settings. For Intel Macs it's a bit more complex: you'll need

to sign out of every service you use on your Mac, de-authorise accounts, unpair Bluetooth and then restart your Mac in Recovery mode. You can then erase your Mac and reinstall a clean copy of macOS.

Run old macOS on it

infinitemac.org

macOS Ventura doesn't let you run older apps that long predate your hardware – but infinitemac.org does, and it does it in your web browser. It's the latest in a series of web-based Mac emulators and it can load/save files from a local drive as well as from its own Infinite HD of apps and games. You can even network with other copies of it. If you'd rather run something locally, Basilisk II (basilisk.cebix.net) is available for Intel and PowerPC Macs and can emulate a Mac Classic running up to Mac OS 7.5 or a Mac II running up to Mac OS 8.1. They're great fun and, because by modern standards they have tiny system requirements, they're speedier than old Macs ever were.

Run another OS on it

linuxmint.com

Have you always wanted to turn your Mac into a Chromebook or a Linux computer? It's easier than you might think. Chrome Flex is a super-light Chrome OS from Google, and Linux Mint is arguably the most Mac-like and definitely one of the most welcoming Linux options. Both have good alternatives to the apps you're used to on your Mac, and both have detailed installation instructions online.

Run its apps elsewhere

virtualbox.org

If your hardware needs to be put out to pasture but you still need to run certain apps or access files, you can run macOS very well in a virtual machine on a Windows PC: Oracle's VirtualBox and VMware's Workstation Player can run a full version of macOS inside Windows so you can still access your stuff even if you've left the Mac behind. If the PC's relatively recent it should run fairly quickly too.

Transform it

etsy.com/uk/shop/mactechnology

If you look on Etsy, you'll see old Macs made into all kinds of things: keyboards turned into wall clocks, ancient iMacs working as aquariums and in the case of MacTechnology, Power Macs turned into coffee tables and flat-screen iMacs made into mirrors. There's even an iMac make-up mirror with its own integrated LED lights.

Image credits: Apple Inc, Linux Mark Institute, Oracle

The source for tech buying advice

techradar.com

Beginner's Guide to Time Machine

Time Machine is built into macOS, so there's no excuse for not backing up your Mac

WRITTEN BY **KENNY HEMPHILL**

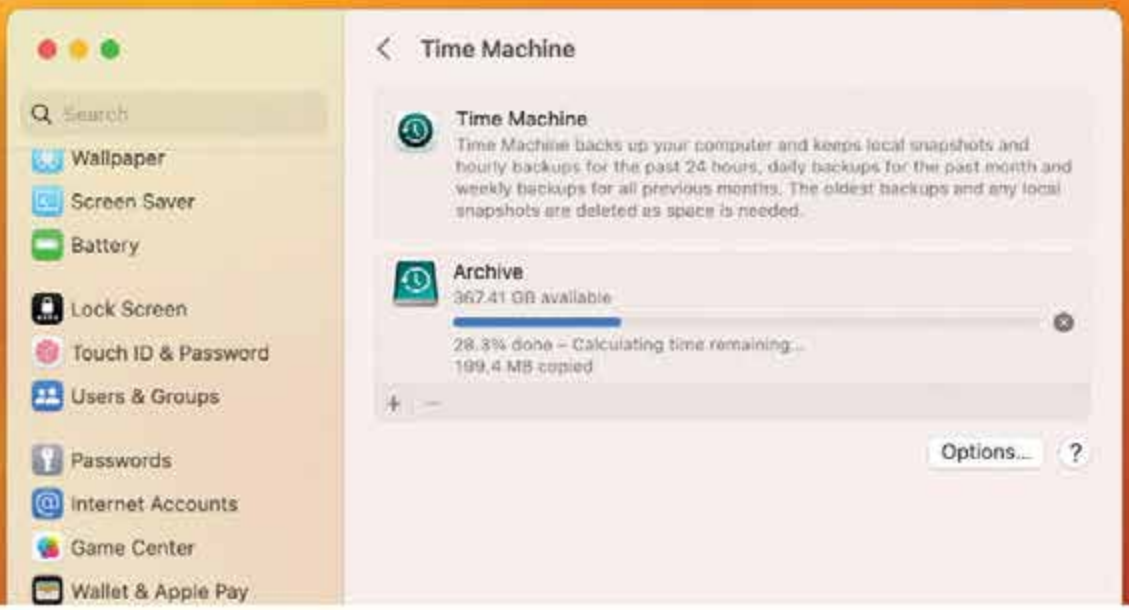
Apple first launched Time Machine 15 years ago in an attempt to make it as easy as possible for Mac users to back up regularly, and be able to restore anything from a single file to their entire Mac with the minimum of fuss.

Time Machine was launched alongside a neat piece of Apple hardware known as Time Capsule, which combined an AirPort router and a hard drive. The idea was that you would use the networked hard drive with Time Machine to back up portable Macs wirelessly. Time Capsule was discontinued in 2018, but Time Machine lives on and was overhauled following the introduction of the Apple File System (APFS) in macOS Sierra.

You can use any locally connected hard drive or SSD as a destination for Time Machine backups. You can also use a folder on a Mac connected to the same network, or a network-attached storage (NAS) device. Not all NAS work with Time Machine, though; the device must support either a recent version of SMB or Apple's now-deprecated Apple Filing Protocol (AFP). To use a NAS, you'll need to consult the manufacturer's instructions on how to set it up for use with Time Machine.

Image credit: Apple Inc

Time Machine backs up your Mac at hourly intervals, copying only those files that have changed since the last backup.



How to use Time Machine

Set it and forget it – once done, you won't even know Time Machine is running

Time Machine creates incremental backups of your Mac. That means that every time a backup runs, it copies only the files that have changed since the previous backup. It saves snapshots of your data once every hour for the previous 24 hours, once a day for the previous week, and once a week for the previous month. That way, you can roll your Mac back to the state it was in at any point in the previous 24 hours, as well as recover files that were deleted a month ago. Time Machine keeps monthly backups until it runs out of storage space, at which point it deletes the oldest. As well as using Time Machine to recover files, you can use it with macOS Recovery when your reinstall macOS to recover settings from your previous install.

Time Machine also stores snapshots on your startup drive, so you can restore from them even if your Time Machine backup drive isn't available. It stores hourly snapshots for the previous 24 hours, as well as a copy of the last successful backup. Local snapshots are only saved if space is available, and the space they occupy is marked as available by macOS, so they don't reduce the available capacity of the drive. Restoring from local snapshots is automatic when your backup disk is not available.

EXPLAINED... Time Machine's interface ›

1 Control Panel
› When a backup is running, this progress bar tells you how long it has left to run.

2 Quick Links
› The '+' allows you to add another disk as a Time Machine destination and the '–' to remove one.

3 Help
› Options allows you to set backup frequency, set maximum disk usage, and exclude folders.

4 Appearance
› Having had its own pane in System Prefs, Time Machine is now in System Settings › General.

HOW TO Set up Time Machine

1 Choose a drive

Choose a drive to use as a backup destination. You can use any volume on a locally connected drive. But if there is data on it, Time Machine will wipe it before it starts the first backup. You may also be able to network-attached storage.

2 Select the disk

Connect the drive to your Mac and wait for it to mount. From the Apple menu, choose System Settings. Click General, then Time Machine. Click Add Backup Disk, choose the volume you want to use, then click Set Up Disk.

3 Finish setting up

If you want to encrypt your backups, leave Encrypt Backup set to On and type in a password, re-enter the password, and type a Hint. To set a disk usage limit, select Custom and set a limit. Click Done to finish set-up.

4 Choose options

Time Machine schedules backups automatically. You can change that. Click Options and make a selection from Backup Frequency. If you want to back up a MacBook even when running on just battery power, turn that on.

5 Exclude folders

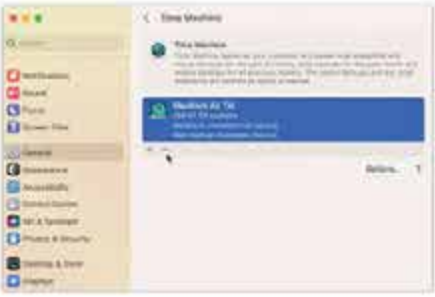
You can choose to exclude folders, like, say, your Applications folder, from backups. To choose what to exclude, click the '+' in Options, navigate to the folder and select it, or drag a folder on to the window. Click Done to finish.

6 Manually start backup

If you set Time Machine to only back up manually, or if it hasn't backed up for a while and you want to start a manual backup, click the Time Machine icon in the menu bar and choose Back Up Now. The backup will begin.

7 Stop a backup

If you need to stop a backup for any reason, click the Time Machine menu bar item and choose Stop This Backup. You can restart a backup when you're ready by clicking the menu bar item again and choosing Start Backup.



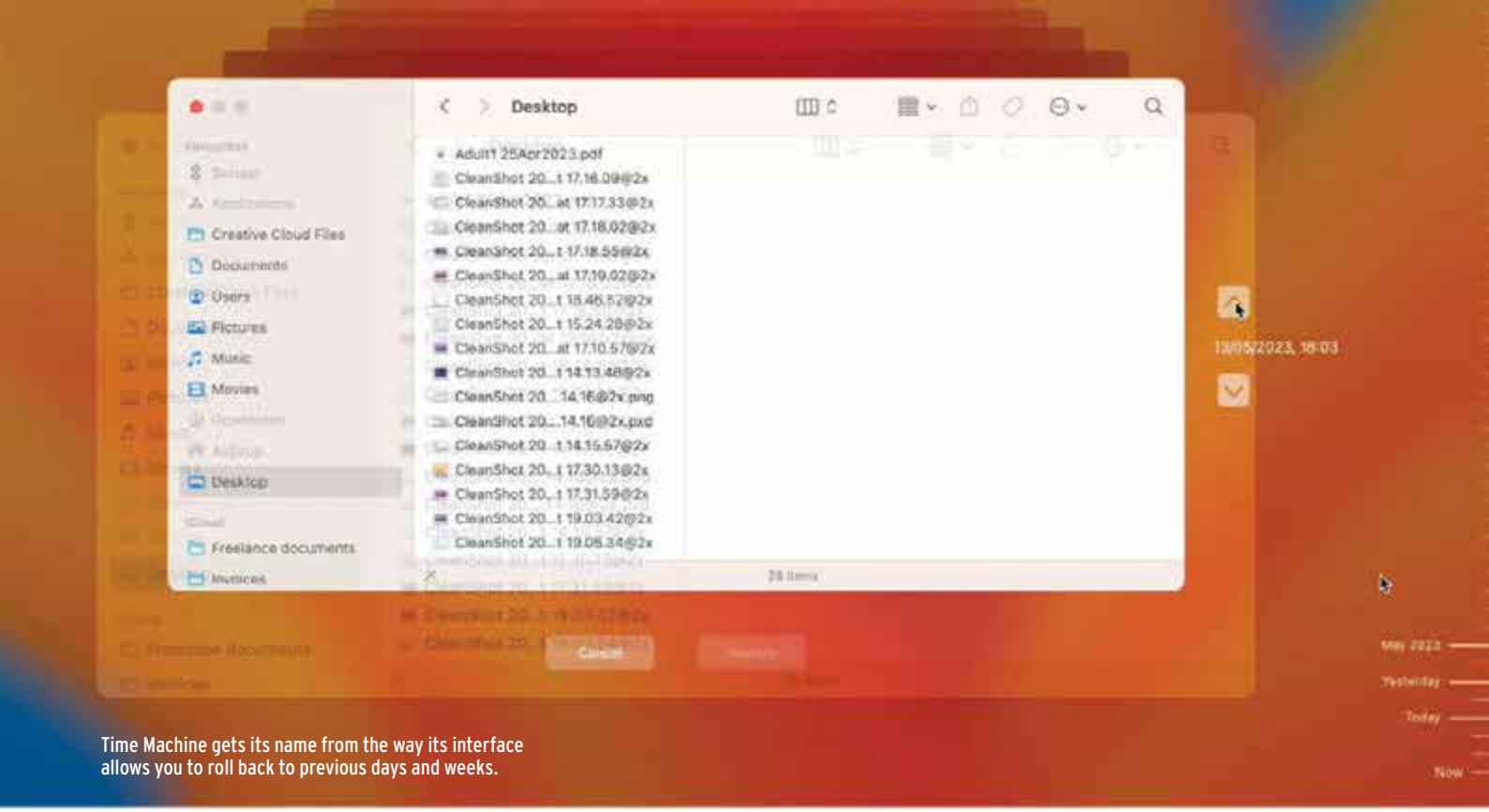
8 Remove a backup drive

If you no longer want to use a drive as a Time Machine backup destination, go to System Settings > General > Time machine. Click 'X' next to the progress bar if a backup is running. Click '–' and confirm to remove the drive.

9 Fix a backup problem

Backups sometimes fail to complete, for a number of reasons. If this happens, click Time Machine in the menu bar, choose 'Open Time Machine Settings' and click the red 'i' to find out what caused the failure and resolve it.

Image credits: Apple Inc, LaCie



Time Machine gets its name from the way its interface allows you to roll back to previous days and weeks.

Recover your data

Whether you need just one file, or restore an entire Mac

When Apple first launched Time Machine, it pitched it as a way to roll your Mac back to an earlier point in time, days, or even weeks ago, before you made changes to, or deleted, files. With a skeuomorphic interface typical of Apple at the time, invoking Time Machine seemed to enable you to travel back in time via Finder windows from an earlier age, or at least a few days ago. The skeuomorphic time travel has gone, but Time Machine's interface remains much the same, displaying stacked Finder windows and arrows to 'travel' back and forth. When you find the date you want, you can then navigate the Finder as if you were back to that date, and recover whichever files you have changed or deleted and want to restore.

Time Machine is now integral to the process of recovering from a software catastrophe. It's the first option in the list when you boot into Recovery mode and launch macOS Utilities. And, if you need to reinstall macOS, you can use Time Machine to restore files and settings.

HOW TO Recover files in Time Machine ›

1 Launch Time Machine

If you discover you've deleted a file, or need an earlier version of one, click on the Time Machine icon in the menu bar and choose Browse Time Machine Backups and wait for stacked Finder windows to appear on screen.

2 Locate a backup

Navigate through the backups by using the up and down arrows to the right of the Finder window. Note the date and time displayed between the arrows and keep going until you find the date and time you want.

3 Restore a file

When you find the backup you need, search for the file you need or navigate around the Finder window as you normally would. When you find the file, click Restore to make that version replace the current version.

HOW TO Use Time Machine in macOS Recovery

1 Boot in Recovery mode

On an Apple silicon Mac, shut down, then press and hold the Power button. Click Options from the startup options, then Continue. On an Intel Mac, boot while holding Cmd+R and release when you see the Apple logo.

2 Restore from a backup

In the macOS Utilities window, choose 'Restore from Time Machine' to recover all the files and settings from a recent backup. Follow the instructions on screen to choose a backup and complete the process.

3 Reinstall and restore

To reinstall macOS, choose that option from macOS Utilities. Follow the on-screen instructions. When Migration Assistant launches, choose 'From a Time Machine backup or Startup disk', click Continue and choose the backup.

HOW TO Time Machine tips

1 Navigate quickly

If the file you want to restore is several days or weeks old, instead of using the arrows to find the backup, move the pointer to the bottom right of the screen, then up the notches that appear until you reach the date.

2 Set up a new Mac

To set up a new Mac with a Time Machine backup of your current Mac, connect the backup drive to the new Mac the first time you boot it. Then choose the first option in Migration Assistant and select the Time Machine backup.

3 Preview a file

If you're not sure whether a file you find while using Time Machine is the one you actually want to restore, you can preview it using Quick Look. Just select it in the Finder window as normal, and press the Space bar.

Carbon Copy Cloner and SuperDuper allow you to create bootable clones of your Mac.

Alternatives to Time Machine

Third-party options for backing up your Mac

There are several third-party tools that enable you to create backups of your Mac. And online backup tools like Backblaze (backblaze.com) and Carbonite (carbonite.com) have Mac clients for their proprietary service. Of the tools that backup your Mac to an attached disk, Carbon Copy Cloner (bombich.com) and SuperDuper (shirt-pocket.com) allow you to create bootable clones of your Mac, as well as schedule multiple backup routines. And ChronoSync (econtechnologies.com) allows you schedule the synchronisation of folders on your Mac with folders on an external drive.

Image credits: Apple Inc, Shirt Pocket

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EDITED BY **ROB MEAD-GREEN**

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★★★★★ A brilliant thing

★★★★☆ Strongly recommended

★★★☆☆ Worth considering

★★☆☆☆ Notable flaws

★☆☆☆☆ A waste of your money

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Image credits: Audio-Technica Ltd, Koninklijke Philips NV, DTN, Adobe, Pinterest Inc

Audio-Technica ATH-M50xSTS

High-quality streaming and listening headphones

› £199 › FROM audio-technica.com › FEATURES Digital USB audio connection (Analogue version available), integrated boom microphone, swappable earpads, sidetone voice monitoring

The headphones deliver a detailed and solid soundstage

Mac FORMAT VERDICT

› Solid pickup and playback for those serious about streaming and broadcasting.

★★★★☆

- ⊕ Excellent audio quality
- ⊕ USB connectivity is convenient
- ⊕ Flip-to-mute mic
- ⊖ Relatively pricey

Streaming headsets have grown in popularity as a result of the explosion in gaming, conferencing and other online pursuits that have taken off in recent years. While entry-level models can be very inexpensive, those who are serious about streaming will often want to look at a higher quality solution. Audio-Technica's ATH-M50xSTS comes in two versions, an Analogue model with XLR and 3.5mm audio plugs and a Digital (USB) version, as reviewed here.

Costing around £30 more, the Digital model plugs directly into your Mac using its hardwired two-metre USB-A cable, or via the bundled USB-C adaptor. You don't need any kind of audio interface and can take advantage of the headphones' on-board DAC (digital-to-analogue converter) to achieve up to 24-bit, 96kHz audio quality which will likely sound better than just plugging into your Mac's mini-jack output. They are self-powered, drawing a small amount of current from your computer's USB port.

At 330g, the headphones are lightweight but sturdy and grip your head comfortably. Two pairs of earpads are included, one more closed to achieve better sound isolation and another more open and breathable, for better comfort in extended use. There's no set-up, simply connect the headphones to your Mac and they appear as an audio output option with the microphone appearing as an audio input. The headset also works with USB-C-equipped iPad models.

Audio-Technica has integrated a back electret cardioid condenser mic based on its 20 series, in this case a unidirectional model with a frequency response of 50Hz-20kHz at 3cm from your mouth. The mic is on an adjustable arm and in use you almost forget it's there. The mic can be muted by simply lifting the boom arm to its 'up' position, so there's no need to hunt for buttons to temporarily mute yourself.

The Digital model has what the developer calls 'sidetone' tech which seems to be a form of direct monitoring, letting you hear your voice in the headphones as you speak for a more natural experience. This works well and avoids the disassociative effect that can sometimes result from speaking while your ears are covered with headphones. A small monitor dial on one cup can be used to change the volume of your voice in the headphones, and pressed on or off to toggle live monitoring.

Balanced and energetic

The headphones themselves are of the closed-back dynamic variety, using 45mm large-aperture drivers and with a frequency response of 15Hz-28kHz, which is considerably wider than the standard 20Hz-20kHz that you will find in most similar or competing products. They deliver a detailed and solid soundstage, pleasingly balanced across a rich low end, clear mid-range and energetic top end. While this could be argued to be overkill for listening to audio that's streaming over the web and thus likely compressed to some degree, it pays other dividends. The microphone performs very well, rejecting extraneous noise and picking up your voice clearly and consistently. Any kind of gaming or podcast audio content you're listening to while speaking comes across beautifully.

In fact, thanks to Audio-Technica's pedigree, these are actually pretty serious headphones for listening to music generally. Given that the mic isn't removable you may not buy them solely for listening. But if you already use them for streaming, being a great pair of headphones for general listening is a bonus.

The Digital (USB) model will be perfect for most people, negating the need for any kind of audio interface and connecting directly to your Mac. If you happen to have an interface and want the option of using the headphones with a mixing desk or other analogue audio gear, the regular Analogue version may be worth a look and is a little cheaper. **Hollin Jones**

Lightweight but sturdy, the headphones come with two types of earpads.

Image credit: Audio Technica Ltd

Cherry's 'SX' scissor keys offer a great typing experience.

Cherry KW 9100 Slim for Mac

Affordable alternative to Apple's Magic Keyboard

› **£59.99** › **FROM** cherry.co.uk › **FEATURES** Switchable Bluetooth/2.4GHz RF wireless, magnetic support bar, 13 extra function keys, Nano-USB receiver, 440x130x15mm, 675g

You can easily switch between different Macs on the fly

Mac FORMAT ★★★★★ EDITOR'S CHOICE

Mac FORMAT **VERDICT**

› Nearly half the price of Apple's full-size Magic Keyboard, and nearly just as good.

★★★★★

- Great typing feel
- Switchable wireless
- Fantastic battery life
- A bit of a steal

Apple's Magic Keyboard is a brilliant wireless option for typists wanting the best feel possible, but at £99 for even the entry-level model, it's far from affordable. Cherry's KW 9100 Slim for Mac offers much the same package, for £39 less.

On paper, it doesn't feel like anything obvious has been sacrificed, either. If anything, you get more bang for your buck. A full-size keyboard, the KW 9100 Slim for Mac features 13 extra function keys along the top, there's a magnetic support bar included, which allows you to raise the height of the keyboard, if you so wish.

Unlike the Magic Keyboard, Cherry's offering can be connected wirelessly to a Mac either using Bluetooth or 2.4GHz RF wireless, thanks to the included Nano-USB receiver. That means you can easily switch between different Macs on the fly. A USB-A to USB-C cable is included for recharging.

The keyboard forgoes blacklit keys but does boast remarkable battery life.

As with the Magic Keyboard, the KW 9100 Slim for Mac doesn't offer backlighting, which might explain the meritorious battery life. We've been using it for months at a time, and the battery has never dipped below the half mark. By comparison, you get one to two months' battery life from the Magic Keyboard.

A lot to like

Our favourite aspect of this keyboard and, crucially, the most important is the typing experience. Here, Cherry's experience in key technology shines through. The 'SX' keys sit atop a scissor mechanism, which translates to a relatively quiet key action, with just the right amount of travel. It's comfortable for hours on end, making it a great option for serial typists.

The only real negative we can level at the KW 9100 is that it doesn't exude the same kind of premium look or feel of the Magic Keyboard. Although the silver surround is a good match for your Apple devices, the chassis is pure plastic, unlike the aluminium of Apple's own. It's also not quite as slim or lightweight. None of this is a huge deal, and it's totally justified in the much lower price tag of Cherry's keyboard.

Overall, the KW 9100 Slim for Mac is a great full-size wireless keyboard. **Nick Odantzis**

› Image credit: Cherry

When you've finished making notes, scan and save them with the Rocketbook app.

Rocketbook Pro

Why recycle paper when you can do away with it altogether?

› A5 **£60**/A4 **£70** › **FROM** getrocketbook.co.uk › **FEATURES** Pen-and-paper feel; write, scan, enhance and erase; 1x Pilot FriXion pen, 1x microfibre cloth, Rocketbook app (free) requires iOS 13 or later

Handwriting can be turned into editable text using OCR

The paperless office hasn't arrived. Sure, lots of documents have gone digital. We can fill in and even sign PDF forms, keep digital diaries, calendars and address books, access instruction manuals online instead of getting printed versions and more. But we all need to make handwritten notes every now and then.

That's where Rocketbook Pro comes in. Available in A5 and A4 sizes and Sage Green, Black and Coast Blue colours, this refillable vegan leather scratch-resistant hardcover volume uses (polyester composite) 'paper' that can be reused, over and again. Write on the supplied paper (20 sheets) with the bundled Pilot FriXion pen (black supplied, red and blue available), and when you've finished dampen the included microfibre cloth and wipe it clean.

When you've finished with your notes, you can wipe the pages clean and start again.

You can use the reverse of the pen to erase minor errors too. The paper is waterproof and tear-resistant so it should last a long time, but refills – and other styles of paper such as a daily/monthly planner and to-do lists – are available from the Rocketbook website.

The Rocketbook Pro isn't all about reusing the paper. Given the price, and the fact you can get a similarly-sized regular notebook for about a quid, it would take years for the savings to cover the initial outlay. Download the Rocketbook iOS app and you can scan completed pages and send them to the cloud. Seven icons at the foot of each page represent seven folders in your cloud space; put a cross on one and it's sent to that folder. Handwriting can be turned into editable text using OCR too, but not on the app. Instead, it's emailed to your Mac along with a PDF of the scan.

The Rocketbook Pro works well enough, but is it a solution looking for a problem? Ordinary notebooks are cheap, can be used with regular pens and are easily recycled. The OCR does a decent job, but you could do this with a regular notepad and Live Text too. So does the Rocketbook Pro justify its asking price? If you think it does, you probably won't be disappointed, but we suspect most people will be just as happy with a biro and a jotter.

Ian Osborne

Mac FORMAT

VERDICT

› It does everything it claims to do, but is there enough here to justify the price?

★★★☆☆

- ⊕ Reusable paper
- ⊕ Scan notes to cloud
- ⊖ Can do most of this with a biro, jotter and iPhone camera/scanner
- ⊖ Notepads are far cheaper

› Image credit: Rocketbook UK

Philips 16B1P3302D Portable Monitor

More screen space for when you're on the move

› £240 › FROM philips.co.uk › FEATURES 15.6-inch backlit LCD IPS display, Full HD resolution (1920x1080 @ 141ppi), 16:9 aspect ratio, 250cd/m² brightness, 2x USB-C (with power delivery), 1x audio output, 359x232x119mm, 1.03kg

Philips' 16B1P3302D does exactly what it sets out to do, and it does so brilliantly

Philips' 16B1P3302D isn't a huge revision from the similar model we reviewed back in *MF387*. The only major change is that the new version has twin USB-C ports instead of the single socket offered by its predecessor. But as the older monitor was very well received, not much needed to change.

Having a notebook to take away with you and use on the go is very convenient, but you might miss the screen space offered by your desktop's two-monitor setup. Portable notebook monitors often struggle to combine lightweight portability with a high viewing quality, but this new model from Philips certainly hits the mark.

Weighing just 1.03kg, it's very portable. Slip it in your bag with your notebook; it won't give you back strain. It's a decent size too, with the screen measuring 15.6 inches (39.6 cm) corner to corner. A handy protective case keeps it from getting scratched in transit, and there's a USB-C to USB-C/A cable.

With the stand folded back it's just 15mm deep at its thickest. The stand raises the screen between 0-90°. You can turn the monitor on its side and use it in portrait mode too, but when doing so, you can't tilt it forwards and backwards. It supports VESA mounting to add a stand or wall mount it, though this might seem a strange thing to do with such a portable screen. The monitor's only outlets are the two USB-C ports and a 3.5mm socket for headphones or external speakers. It's powered from your notebook or USB-C iPad (mirrored screen only unless you have an Apple silicon processor). It doesn't have an internal battery, so it won't work with a smartphone; they don't output enough power.

At 1.03kg, the monitor really is very light, so it's easy to carry around; you also get a handy, protective case.

Good from all angles

The display puts in a solid performance. Its maximum brightness of 250cd/m² is adequate, but not excellent. Perhaps this is inevitable – an over-bright display would drain your input device's battery. The screen's claimed viewing angles are 170°, horizontal and vertical, and in our tests, this seemed accurate. Thanks to the IPS LCD screen, you can look at it almost side-on and the colours don't shift at all.

With 16.2 million colours on offer and a 50,000,000:1 SmartContrast, its visuals won't disappoint. In our tests, its gradient ramps were smooth and it proved quite capable of distinguishing between 95 and 100% black, and 0 and 5% black, something that still trips up many portable monitors. For further fine tuning, Smartimage presets offer optimised viewing settings such as Office, Photo, Movie, Game, Economy, EasyRead and a LowBlue mode for when you use it late at night. The 4ms refresh rate doesn't make it ideal for gaming, but then it's not a gaming monitor.

There's no touchscreen, which you might miss when using it with an iPad, and no internal speakers either, but that's no great loss. The Philips 16B1P3302D Portable Monitor does exactly what it sets out to do, and it does so brilliantly. It's an excellent second screen for when you're out and about with your Mac notebook. **Ian Osborne**

Mac FORMAT VERDICT

› A superb external screen for notebooks. Plug and play simplicity, decent quality and a fair price.

★★★★☆

- ⊕ Plug and play
- ⊕ Clear and well defined
- ⊖ No touchscreen
- ⊖ Could be brighter

Although it's not particularly bright, there are 16.2 million colours on offer and a 50,000,000:1 SmartContrast.

Philips' respected portable monitor now comes with a very welcome second USB-C port.

The continuous tilt stand bends from 0 to 90 degrees; you can turn the monitor on its side for portrait mode but you can't then tilt it forwards or backwards.

Image credit: Koninklijke Philips NV

AnkerWork M650 Wireless Microphone

Record great wireless sound for video

› £249.99 › FROM ankerwork.com › FEATURES Wireless recording of lossless audio, touchscreen operation, mono or stereo; Lightning, USB-C or analogue audio connection

The wireless mic system is stored inside a USB-C charging case.

Each transmitter has on-board storage for up to seven hours of audio

While the video capabilities of iPhones and digital cameras have improved dramatically in recent years, their audio performance remains a distant second. With so many people creating and broadcasting video content, a dedicated wireless microphone is an essential tool for creating a high-quality end product. AnkerWork's M650 is designed to work with essentially all your devices and take the hassle out of recording sound, mainly though not exclusively, for video.

It bears a passing resemblance to a beefed-up pair of earbuds, with a USB-C charging case that houses two transmitters and a receiver. As with earbuds, placing the components in the case charges them and you'll get six hours of use on a single charge or 15 hours in total with the case. The units come pre-paired and can be used to record dual mono or stereo sound. Your settings are made on the receiver unit which has a small but useful touchscreen and an easy-to-use interface for configuring everything from noise reduction and recording levels to monitoring and storage.

It can fit directly to the hotshoe mount of a camera if you're using one, with a 3.5mm cable to plug into your camera's mic input or, via the included Lightning or USB-C adaptor, directly to your iPhone or iPad. Plug the USB-C cable between the receiver and your Mac and it becomes an audio interface, with the transmitters able to be recorded directly into the computer. You also use this method to connect to the AnkerWork software from where you can then make settings, update firmware and download audio. Each transmitter actually has on-board storage for up to seven hours of uncompressed audio, which is well worth using as a safety backup so you have two copies of everything.

Wireless for sound

The transmitters use an omnidirectional microphone and have digital signal processing (DSP) that intelligently cuts out background noise – AnkerWork calls this VoiceShield – and you get two optional windshields to help in poor conditions. The transmitters have a mute button as well as a TRS input for a separate lavalier mic, and can be clipped on to clothing or held on via a magnet. They also have a couple of different coloured covers you can swap out to help blend in with clothing.

The system uses the LC3Plus codec to transmit lossless audio up to 200m at very low latency and this works supremely well in practice. Voice pickup and isolation from the mics is excellent, as is signal strength. Set-up is simple and, once up and running, you can almost forget about the mics since they just work. The M650 is an elegant and well-built solution for high-quality audio recording with almost any kind of device and easy enough for practically anyone to use. **Hollin Jones**

Mac FORMAT ★★★★★ EDITOR'S CHOICE

Mac FORMAT

VERDICT

› An elegant and user-friendly way to capture high-quality sound for video, podcasts and more.

★★★★★

- Simple setup
- Superb results
- Great connectivity options
- Useful accessories

› Image credit: Anker Innovations

The Cobra SC 200D is packed with features, but it's not wildly user-friendly in practice.

Cobra SC 200D

Quad HD+ dash cam is useful, but flawed

› **£179.95** › **FROM** eu.cobra.com › **FEATURES** Quad HD+ (2560x1600) front camera, Full HD (1920x1080p) rear camera, 3in colour display, Bluetooth, Wi-Fi and GPS, microSD card slot (16GB card included)

Both front and rear cameras can be easily attached using the sticky pads supplied

Now that roads are busier than ever, an extra pair of eyes is always useful, especially when those eyes can alert you to incoming hazards while also recording real-time video – just in case the worst should happen. Those are good reasons for buying any dash cam, but Cobra's SC 200D throws in some extras: iPhone connectivity via the free Drive Smarter app, plus safety camera alerts via a second iRadar app, though you may prefer to use Apple's own Maps app, or Waze.

The Cobra SC 200D comes in two parts: the first is a front-facing Quad HD+ (1600p) camera with a 3in colour LCD display that's designed to keep an eye on the road ahead; and the second is a smaller rear-facing 1080p camera that keeps watch behind you, with its video displayed picture-in-picture style on the main unit's screen. The main camera can be used in conjunction with the second or used solo, but note: the front-facing camera only records in Quad HD+ when the rear camera is disconnected, otherwise it only records in HD.

Both the front and rear camera mounts can be easily attached to your car's front and rear screens using the sticky pads supplied, while power is supplied to both units using your car's 12V adaptor, with an additional USB-A port on the top so you can charge your iPhone too.

Dash cam footage can be downloaded to your iPhone, but location information often shows you as being at sea!

Crash course

In use, the Cobra SC 200D is a mixed blessing. While recording quality from the cameras is good, there doesn't seem to be a way to switch off the display while driving – something that's doubly-distracting when the dash cam is placed next to your car's rear-view mirror – leading to some unexpected jump-scare moments. The SC 200D also has a habit of unpairing itself from its partner apps, meaning you have to take the time to reconnect it every time you get in the car, which is annoying when you just want to get in and go. The hardware's good; the implementation and software that drives it less so. **Rob Mead-Green**

Mac FORMAT VERDICT

› A high-quality dash cam let down by some odd design choices, particularly when it comes to usability.

★★★☆☆

- ⊕ Quad HD+ video recording quality
- ⊕ Safety camera alerts
- ⊖ Always-on display can be distracting
- ⊖ Iffy implementation

› Image credit: Cobra Electronics Ltd

GROUP TEST: WEATHER APPS

The best apps for forecasts at your fingertips

Group test

Reviewed by
CRAIG GRANNELL

ON TEST...

- CARROT Weather
- Hello Weather
- Met Office Weather Forecast
- Tomorrow.io: Weather Forecast
- Weather
- WeatherPro

Image credit: Getty Images

The sun is shining. You bound outside with glee. 20 minutes later, you're soaked to the bone, having been surprised by a sneak attack from massive grey clouds full of unexpected rain. Honestly, you've only got yourself to blame: after all, your phone has a weather app.

But is it the best one? That's what we're testing here: the finest the App Store has to offer in this field, to help you plan the day and figure out whether you'll need to slap on the sunscreen, pick up your brolly, don some snowshoes, or grab your scarf and woolly hat.

Notably, many weather apps go beyond forecasting. So we'll also explore features such as activity recommendations, air quality data and customisation. One app here even lets you chat with an AI moonlighting as a meteorologist, which has designs on eradicating humanity. And also laughs at your misfortune when it's chucking it down.

We're not sure that's entirely a case of 'outlook: sunny', but this all shows there's great variance in the world of weather apps, and lots to find beyond the one built into your iPhone.

How we tested

We did fashion a ludicrously complicated spreadsheet in a futile attempt to test accuracy. But that comes with a huge caveat that you can only realistically test for a handful of locations. So most of our time was spent digging into features. Do these apps help you get information quickly? Is it possible to adjust an app to your needs? And, importantly, do any of these third-party products provide enough of a reason to move beyond Apple's hugely improved Weather?

Things to consider...

1 Are forecasts clear?

Information is no good if you can't make head nor tail of it. Weather apps need clarity, so you can get to the most important info fast.

2 Can you switch data?

Different data sources work better for certain locations. If you're limited to a single source, that might render a weather app useless to you.

3 Are there ads?

Free often means you are the product; many weather apps didn't make our list because they were packed full of intrusive ads. So be wary of that if you head further afield.

4 Can you track locations?

You might want to monitor weather conditions in multiple locations, for example when you're heading away on holiday. Most apps do this – but not all do it well.

CARROT Weather

› **Free**; Premium **£19.49**/year › **FROM** meetcarrot.com

If there's such a thing as a 'pro' weather app, it's CARROT. It's unique in so many ways. Notably, you can select layouts from a gallery, or craft your own using tweakable drag-and-drop components.

Smart design thinking extends throughout. Cards surface important information in small spaces. Share a screen of the current forecast and the app can redact your location. And the iPad design is superb, coming across like a weather station.

A previous weak point, iffy maps, has been addressed. They're now far more responsive. The Apple Watch app is great. The widgets are plentiful in number and offer great clarity. And the app is fun. It's helmed by a human-hating AI that delivers snark alongside forecasts. There are games to play and achievements to unlock.

The elephant in the room is how much functionality – sources, notifications, customisation and widgets – is locked behind a subscription. But CARROT is worth the outlay if you want the best.

VERDICT

- ⊕ Superb design
- ⊕ Fully customisable
- ⊕ The best iPad app
- ⊖ Expensive

★★★★★

Hello Weather

› **Free**; Pro **£10.99**/year › **FROM** helloweather.com

While Dark Sky is much missed (see p90), if you cared more about that app's clarity than its fancy map, Hello Weather might suit. It's noticeably sunnier in disposition than Dark Sky, though, with bright, bold icons and overviews you can see from across the street. That makes it kind of great – adding personality to an often dour and restrained genre.

Beyond the basics, there's not a great deal to see. The map is static in the free version, and while you can define favourites, there's no quick browsable view – you must select each in turn to see local conditions. Also, the iPad app resembles a blown-up iPhone app and uses the screen poorly.

Pay for Pro and you unlock Apple Watch complications, sources beyond Apple's, and an animated radar. The map isn't great, but it's worth paying if you love the interface but want alternate data. And we appreciate the creator not visually wrecking the free version, which merely adds an unobtrusive upgrade banner.

VERDICT

- ⊕ Friendly design
- ⊕ Straightforward
- ⊕ Great widgets
- ⊖ Suboptimal iPad layout

★★★★☆

› Image credits: Grailr LLC, Electric Dream Machine Inc

Met Office Weather Forecast

› **Free**; Ad-free **£2.99** › **FROM** metoffice.gov.uk

Like to get your weather forecasts from the nice people on the telly? This app evokes those sorts of forecasts, with a main view by default dominated by a still frame which you then tap to watch a forecast provided by an actual human. It's all rather lovely and provides context.

Almost everything else is the weather app equivalent of a supermarket tin of essentials baked beans. The graphic design is basic. The widgets are weak. There's no Apple Watch app. And yet we rather liked using this app. It succeeds because of clarity. The maps view isn't flashy, but it is responsive. The main view is unexciting, but it's easy to scan, and tapping on a forecast immediately loads a scrolling view with plenty of additional details. Even the ads are unobtrusive – and can be removed for just £2.99.

A phrase comes to mind about books, covers and judging. This app's a lot nicer than you'd first expect.

VERDICT

- ⊕ Human forecaster
- ⊕ Efficient
- ⊖ Can be overly basic
- ⊖ No Apple Watch app

★★★☆☆

Tomorrow.io: Weather Forecast

› **Free**; Premium **£21.99**/year › **FROM** tomorrow.io

This is the most human app on test – at least in terms of language. The main location view lists forecasts by periods of the day – morning/afternoon/evening/night – and indicates which are for tomorrow. The 14-day view adds day and date labels, along with a darker background for weekends.

Real-time health read-outs are provided for air quality and pollen. In a dedicated Alerts tab, you can select from a range of notifications, and define custom ones based on temperature and rainfall. It's also possible to set activities, such as gardening and cycling, for a location, whereupon you'll see cards outlining whether upcoming conditions are optimal, acceptable or bad.

Where Tomorrow stumbles is in its broader design. We like that you can move sections, but icons within the views are indistinct, hampering legibility. Worse, the disappointing iPad app looks unfinished, as does the Apple Watch app.

VERDICT

- ⊕ Good use of language
- ⊕ Activities advice
- ⊖ Indistinct design
- ⊖ Woeful iPad app

★★★☆☆

› Image credits: HMSO and Kings's Printer, The Tomorrow Companies Inc

Weather

› **Free** › **FROM** apple.com/uk

Installed on every iPhone from the start, but absent from iPad until 2022, Weather had a major overhaul last year. Along with rolling in the weather map from when it acquired Dark Sky, Apple added lashings of extra info.

This exists in panes on the main view, providing fast access to data like UV and daylight. On iPad, Weather makes great use of space – on a 12.9-inch Pro, every pane can be simultaneously viewed. Elsewhere, the map impresses, with 'rainfall' rolling across the screen.

Given that this is an Apple app, it's easy to use, but also opinionated. Everything is very blue and lacks contrast. The favourites list shows conditions as photographic illustrations, when icons would be better. And the panes cannot be rearranged to suit your needs.

Beyond that, you get pretty good widgets and a middling Apple Watch app with a weird clock-like hourly view. Overall, a quality freebie, though, if you never feel the need to tweak.

VERDICT

- ⊕ Easy to use
- ⊕ Hypnotic map
- ⊕ Lots of info
- ⊖ Inflexible

★★★★☆

WeatherPro

› **99p**; Premium **£8.99**/year › **FROM** weatherpro.com

It's perhaps unfair to suggest this app is for weather wonks but we'll say it anyway. WeatherPro won't win any design awards, but it's jam-packed with data.

The info-dense main view is great, with each day's outlook strip showing conditions, temperatures, sun hours, rainfall and wind speed. Tap the graph button and you can peruse stats as wiggly lines, while dreaming of a weather forecaster spot on the evening news.

The separate iPad app combines these views, which will delight or deter, depending on how keen you are to be deluged with data. Alas, the maps are less great. The radar/satellite views are functional but dated. And most of the Maps tab sits behind a subscription (not evident until you tap).

WeatherPro's sole data source, MeteoGroup, also wasn't available to third parties at the time of writing. It's the most accurate on test, but that may be coincidental. Still, if you like data-dense views, 99p is a small price to see if the app works for you.

VERDICT

- ⊕ Data dense
- ⊕ Clear main view
- ⊖ Feels dated
- ⊖ Iffy maps

★★★☆☆

› Image credits: Apple Inc, DTN

THE WINNER

CARROT Weather

Come rain or shine, CARROT excels with flexibility and design smarts

Mac FORMAT BEST ON TEST

You know how some people want to bake in the sun, others want to splash about in the rain, and still more are only truly happy when their locale looks like it would suit penguins? Weather apps are like that – personal things, designed to suit individuals.

Every app on test is objectively good. We liked Tomorrow's activities, the Met Office's live forecast, WeatherPro's geekiness, and Hello Weather's vibrant design. Apple deserves praise, too, for iterating on its built-in Weather and creating something that now feels like an app you'd want to use, rather than just because it's there and free.

CARROT Weather, though, sits above every other app in almost every way. It's better designed. There are loads of settings. You can make custom layouts. And it's fun – but in a manner that's not intrusive, if you just want to get at a forecast.

The downside with CARROT? It's the priciest app on test, but we think it's worth it. And should you not want to pay for weather forecasts, you certainly have a solid selection with the alternatives here.

How do they compare?

Specs	CARROT Weather	Hello Weather	MetOffice Weather Forecast	Tomorrow.io: Weather Forecast	Weather	WeatherPro
Price	Free; Prem £19.49/yr	Free; Pro £10.99/yr	Free; Ad-free £2.99	Free; Prem £21.99/yr	Free	99p; £8.99/yr
Website	meetcarrot.com	helloweather.com	metoffice.gov.uk	tomorrow.io	apple.com/uk	weatherpro.com
Multiple sources	Yes (paid)	Yes (paid)	No	No	No	No
Extended forecast	10–16 days	8 days	7 days	14 days	10 days	7 days; 14 paid
Rainfall radar	Yes	Yes	Yes	Yes	Yes	Yes
UV readout	Yes	Yes	Yes	Yes	Yes	Yes
AQI data	Yes	No	Yes	Yes	Yes	No
Units	°C/°F/wind/ pressure /distance/ precipitation	UK/US/Canada/Intl/ time/wind/pressure	°C/°F/wind	°C/°F/wind/pressure/ precipitation/ visibility	°C/°F	°C/°F/wind/ pressure/ precipitation
Custom layouts	Full custom	No	Removable sections	Moveable sections	No	No
Notifications	Yes	Yes	Yes	Yes	Yes	Yes
Activities	No	No	No	Yes	No	No
Lock Screen widgets	Yes	Yes	No	No	Yes	No
Home Screen widgets	Yes	Yes	Yes	Yes	Yes	Yes
Apple Watch app	Yes	Yes	No	Yes	Yes	Yes
Overall	★★★★★	★★★★☆	★★★☆☆	★★★☆☆	★★★★☆	★★★☆☆

Note: The final verdict scores reflect the overall opinion of a product and are not necessarily an average of the criteria listed in the table.

Image credits: Grailr LLC, Electric Dream Machine Inc, HMSO and Kings's Printer, The Tomorrow Companies Inc, Apple Inc, DTN

Camo Studio 2

Is it time to ditch your Continuity Camera webcam?

› **Free** (offers IAPs) › **FROM** reincubate.com
› **NEEDS** macOS 10.13 or later/iOS 12 or later

Camo Studio 2's strongest feature is undoubtedly its focus on customisation

When Camo Studio first launched, it showed you could get top-notch video output from your iPhone without the help of a webcam. Now that Apple has followed suit with Continuity Camera, is there any need to use Camo? Well, the app's developer Reincubate believes there is, and it's just launched Camo Studio 2 with a slate of new features to prove it.

Let's not beat around the bush: Camo Studio 2 is a superb webcam app that offers far more than Apple bundles into Continuity Camera. For one thing, Camo Studio 2 now works with any camera you can connect to your Mac, not just your iPhone. That includes DSLRs, action cams, monitors with built-in webcams, and even Continuity Camera itself.

The Camo Studio 2's strongest feature is undoubtedly its focus on adaptability. Not only does it place a ton of tools and presets at your fingertips, but almost all of them can be tweaked in minute detail. You can pick and choose resolution and frame rate combinations, select which lens is used, and increase or decrease the strength of nearly every effect.

You get fine-grained control over exposure and ISO, hue, brightness, vibrance, and much more. You can even turn on your iPhone's flash light and change its strength, giving you an impromptu ring light of sorts.

There are some fun AR effects, such as emoji hands.

Blurred lines

Reincubate has attempted to match (and then exceed) Continuity Camera's features. You can now add a subtle Portrait mode effect, blur your background entirely, or replace it with your own custom backdrop. Unlike in Continuity Camera, Camo's Portrait mode lets you adjust its strength.

Unfortunately, the next feature (Camo's full-on background blur) is clunky and a tad

APP TIPS

Customise the interface with different overlays

Overlays are a good way to add handy info to your video feed. To start, choose a template in the left-hand menu. Alternatively, click the '+' button to create a new overlay, or click the four squares to view the overlay gallery.

Double-click your chosen overlay and give it a name. You'll now be able to edit all the elements by clicking the corresponding item in the left-hand sidebar. You can tweak positioning, fonts and more on the right.

Click an overlay image to add your own picture, change its position and aspect ratio, add a border and tweak its corner radius, and more. When you're finished, your overlay will be automatically saved to the gallery.

inaccurate, sometimes leaving messy edges around your subject. There's also Reincubate's take on Centre Stage, and it's much more customisable than Apple's offering. You can manually tell the app where to crop, set it to pan automatically but not zoom, or have it both pan and zoom just like Centre Stage. It's a bit jerkier than Continuity Camera, but you can adjust it much more freely.

Finally, there is a Studio Light equivalent with a strength slider, but Camo lacks its own version of Desk View.

Presets and overlays

Reincubate has baked in a bunch of pre-made presets, but they're disappointing and range from the basic (saturation tweaks) to the downright ugly (bright colour washes). Happily, its filters are much better. Some are fairly standard and create various filmic looks or mute background colours, but the real fun begins with the augmented reality (AR) filters, which let you replace your hands with emoji symbols or put a virtual cat on your head.

The privacy background blur can be a little messy.

We also liked Camo Studio 2's overlays, which superimpose text and images onto your webcam feed. These can include a virtual name tag or your YouTube handle. They're easy to edit with your own details and are useful in all sorts of contexts, from business pitches to video game streaming.

Considering all the features Camo stuffs in, the £34.99 annual subscription is reasonable. If you're not a fan of recurring payments, a lifetime licence costs £69.98. Quite a lot is locked behind the paywall, including all the Continuity Camera equivalent effects and image adjustments, which makes paying worth it if you want everything the app has to offer.

Camo Studio has graduated beyond simply transforming your iPhone into a webcam, and is now a fully-fledged webcam hub chock-full of tweaks and handy customisations. The fact that it gives Apple's own effort a run for its money speaks to its quality. **Alex Blake**

Came Studio 2 is bursting with options for tailoring your webcam visuals.

Mac FORMAT

VERDICT

Camo Studio 2 is an outstanding app that runs rings around Continuity Camera in almost every way.

★★★★☆

- ⊕ Highly customisable
- ⊕ Works with any camera
- ⊕ Full of filters and presets
- ⊖ No Desk View

Image credit: Reincubate Ltd

Layer and work with video as easily as still images.

Pixelmator Pro 3

All your graphics needs handled with ease

› £49.99 › FROM pixelmator.com › NEEDS macOS 11 or later

Pixelmator Pro has always positioned itself as a more user-friendly alternative to Photoshop and, since the release of version 3, that's a more apt description than ever. In fact, while it lacks some of the Adobe app's very advanced features that are of interest mainly to pro designers, it has some tools that Photoshop does not. Priced at £49.99 as a one-off purchase – something Adobe no longer offers – it's remarkable value too.

The app is slick and well designed, making use of your Mac's GPU to keep things nice and snappy. As you'd expect there's full support for layers, text, painting and retouching, with effective AI features that can detect subjects, remove backgrounds and the like.

Version 3 introduced some major new features including over 200 design templates, covering everything from posters and flyers to movie titles and social media stories as well as mock-ups for showing things running on iPhones and Macs. All are easy to edit, with tools to easily replace elements from your own library or by using downloadable content. There's also video support that lets you treat video like stills, using layers, templates and even editing GIFs. Videos can have colours and other parameters tweaked just like photos.

The 3.3 update brings the focus back to still images, adding tools to selectively remove colours, enhance texture and clarity, recover shadows and highlights and control clarity across different tones. New stroke styles are supported as are sidecar files which let you work with images in their original format while preserving layers and edits non-destructively.

From simple to in-depth

Vector creation and editing are supported so you can create resolution-independent graphics, and there's an excellent collection of dual-texture brushes, plus graphics tablet support. Machine learning (ML) also powers a series of quick tools including Auto Enhance, Super Resolution, Match Colours, Quick Select, Select Subject, Select And Mask and more.

Pixelmator Pro is a superb application that provides a selection of the kinds of tools you get across several of Adobe's apps in one easy-to-use package. ML-powered image editing, graphics, text and painting are all here, the interface works well and it won't blind less experienced users with science.

The templates and support for working with video, as well as the ability to output content in a range of web-friendly formats with just a few clicks, make it an excellent all-rounder with all the tools most users will realistically need. And it's certainly capable of more in-depth work as well.

Hollin Jones

Mac FORMAT ★★★★★ EDITOR'S CHOICE

Mac FORMAT

VERDICT

› Slick and highly capable, Pixelmator Pro is a user-friendly graphics powerhouse for the Mac.

★★★★★

- ML-powered tools
- Slick and friendly interface
- Templates genuinely useful
- Affordably priced

› Image credit: Pixelmator Team

Gliding through the air is a serene and satisfying experience.

Laya's Horizon

Time to spread your wings

› **Free**, offers IAPs (requires £4.99/month Netflix subscription) › **FROM** layashorizon.com
› **NEEDS** iOS 15 or later; device needs A12 Bionic chip or later

Mac FORMAT VERDICT

› **Laya's Horizon is a gorgeous, soothing game that's quick to learn and easy to love.**

★★★★★

- **Fast, fluid gameplay**
- **So much to explore**
- **Easy to learn**
- **Relaxing and easygoing**

Laya's Horizon comes from the same developer as Alto's Adventure, and the effervescent momentum that made that title such a hit courses through the veins of its latest effort. It's swift, fun, and beautiful to behold, and a welcome antidote if you're sick of high-pressure, high-intensity mobile games.

Laya's Horizon requires a Netflix subscription but is included in the membership price. Any paid Netflix account (even the cheapest £4.99 per month option) includes the game. Obviously, that makes it rather expensive if you just want the game and don't care for Netflix's other offerings, but cheap if you're already a subscriber.

You play as the titular Laya, a member of the Windfolk who traverse their island home by flying through the air with the help of wingsuit-like capes. Along the way you meet friendly island inhabitants, unlock new capes and charms to boost your abilities, and explore the skies on the gusts and thermals.

Flying controls are intuitive and easy to learn. You use your thumbs as if you are physically manipulating your character: push up with your left thumb and down with your right and Laya swings to the right. Drag your thumbs apart to slow down or pinch them together to use your boost, which is replenished by the golden sparks found across the landscape. Even when you're moving rapidly, Laya feels nimble and manoeuvrable.

Much to discover

The Windfolk's island looks beautiful and is full of varied districts. There are mountain passes and sweeping valleys, thundering waterfalls and icy crags. Whenever you end a run, you return to a high peak to fly off in another direction at your own pace.

The map is littered with challenges to complete, races to win, and collectibles to find. All the while, you are set objectives to level up your cape and unlock new abilities. There's so much to do that each bite-sized run leaves you hungry for another go at exploring the island, and a brief session can quickly expand as you lose track of time.

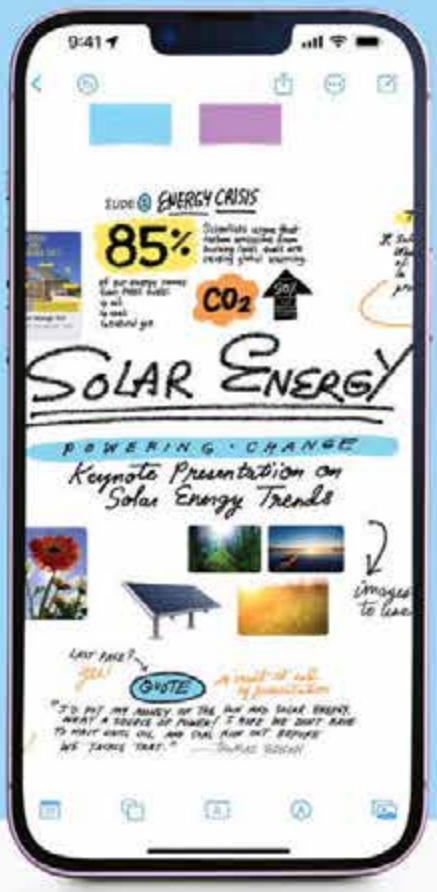
Yet despite everything on offer, there's no pressure to do any of it if you don't want to. There are no timers, so you are free to sightsee and discover as much as or as little as you like. The game is also forgiving; hitting an obstacle will send you bouncing backwards, but you won't die or permanently lose your progress.

If you want to glide from top to bottom and enjoy the flowing freedom that flight affords, Laya's Horizon's potent blend of relaxing gameplay and rewarding exploration is nigh irresistible. It's very easy to while away the time among the passing clouds. **Alex Blake**

› **Image credit:** Snowman Inc, Netflix

6 apps for putting your ideas together

Handy mood boards to get your thoughts in order



Pinterest: Lifestyle Ideas

> Free > FROM pinterest.co.uk
> NEEDS iOS 14 or later

When you think of mood boards, Pinterest stands out as one of the premier apps. It's easy to use and has a huge community. You can create boards and fill them with images and videos that you save from around the web or repost from other users' boards. And if you like someone else's ideas, you can follow them to see what they pin to their own mood boards. If you want to plan out ideas quickly and easily, start with Pinterest.

Freeform

> Free > FROM apple.com/uk
> NEEDS iOS 16.2 or later

Apple's own take on mood boards is Freeform. It provides an infinite canvas on which to draw, write or add images, and there's a large library of assets and guides. Freeform is designed for collaboration – multiple people can edit each document, and it links in closely with Messages and FaceTime. Plus, it's perfectly optimised to work with Apple Pencil on iPad. So, if you're working with a team and looking to flesh out your ideas, Freeform is a great option to try.

Milanote

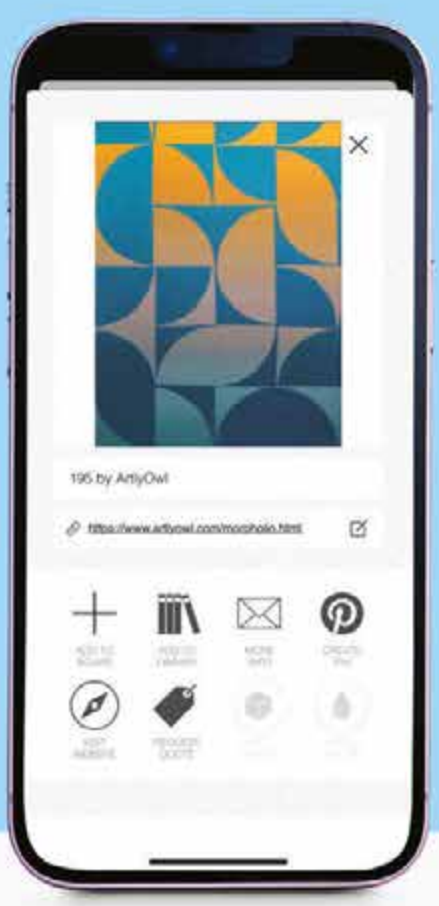
> Free > FROM milanote.com
> NEEDS iOS 14 or later

Collaboration is a key part of any team, and a good mood board app built for co-working can take things to the next level. Milanote hits the spot for creative teams. Not only does it let you save images and organise them on to visual boards, but you can write notes and comments, save links from the web, draw out ideas with an Apple Pencil, and share your work with other people on the go. Put together, it can help you gather disparate ideas and drive towards a final goal.

Image credits: Pinterest Inc, Apple Inc, Milanote Pty Ltd

Having an idea is one thing. Turning that idea into a workable outcome can be another thing entirely. Thankfully, we live in the age of digital mood boards to help us take our tentative concept plans and develop them into practical realities.

We've picked out six of the best for you, ranging from those that just help you get the basics down to give you a more objective view to those that can really help your vision become a reality, even when the process incorporates collaborating with others. **Alex Blake**



Adobe Express

> **Free** (IAPs) > **FROM** adobe.com/uk
> **NEEDS** iOS 15 or later

It's no surprise that Adobe makes an excellent mood board app given the company's stellar reputation. Adobe Express is geared towards making things quick and easy, with none of the hassle that can slow you down. It lets you take advantage of Adobe's massive library of stock photos and fonts, and it's also bursting with top-notch templates. Besides mood boards, you can use it to serve up logos, social media images, flyers and posters, photo collages, and much more.

Morpholio Board – Moodboard

> **Free** (IAPs) > **FROM** morpholioapps.com
> **NEEDS** iOS 14 or later

Mood boards lend themselves well to visual planning, and that's where Morpholio comes in. It's made with interior design and home renovation in mind, and it comes with tons of furniture, lights, plants and more loaded and ready to go. Once your board is complete, you can turn it into a presentation, shopping list, colour chart, and more. Or you can export to PDF, PSD, spreadsheets and cutsheets, giving you plenty of ways to visualise your ideas.

InVision – Design & Prototype

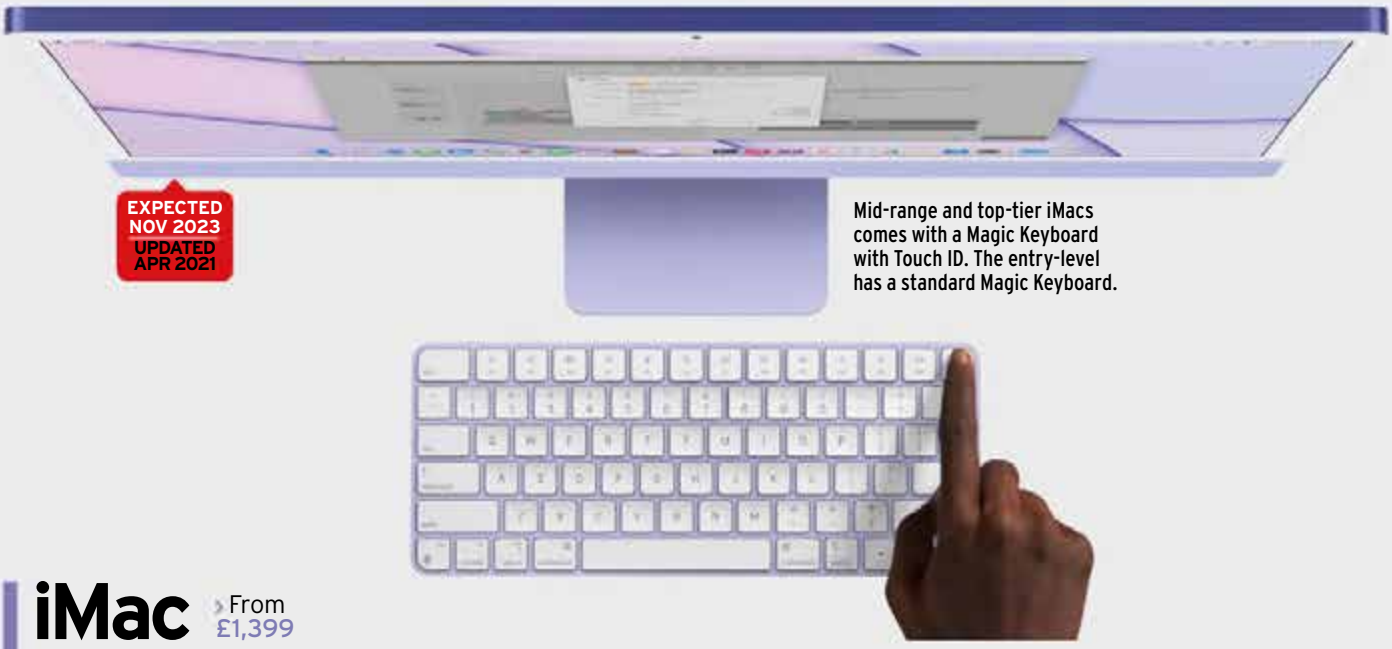
> **Free** > **FROM** invisionapp.com
> **NEEDS** iOS 12 or later

When you're working on a design project, it can be easy to lose track of your ideas, especially as they progress over time. InVision aims to give you one place to manage these ideas, from brainstorming and wireframing to fleshing out designs and creating prototypes. And you can work on all these things with your team thanks to its collaboration tools. If you're building apps, websites, or products, InVision is an ideal companion.

Image credit: Adobe, Morpholio LLC,,InVision

STORE GUIDE

Your guide to the best Apple hardware and third-party accessories



EXPECTED NOV 2023
UPDATED APR 2021

Mid-range and top-tier iMacs comes with a Magic Keyboard with Touch ID. The entry-level has a standard Magic Keyboard.

iMac

From £1,399

Ever since the Bondi Blue iMac debuted in 1998, Apple's all-in-one desktop computer has been setting standards for design and performance.

The current 24in model is certainly Apple's finest yet – thanks to its 4.5K (4480x2520) Retina display and the Apple-designed M1 chip, which is available with either an 8-core CPU/7-core GPU at the entry-level, or an 8-core CPU/8-core GPU on the mid-range and top-tier versions. All models come with 8GB of memory as standard (upgradeable to 16GB), with solid-state drive (SSD) storage ranging from 256GB on the entry-level and mid-range versions to 512GB on the top tier, although you can add more – up to 1TB on the entry-level and up to 2TB on the mid-range and top-tier models if you wish via Apple's build-to-order options.

Available in a choice of seven gorgeous colours (Green, Yellow, Orange, Pink, Purple, Blue and Silver), each M1 iMac also comes with a 1080p FaceTime camera, a six-speaker sound system and support for Spatial Audio. You'll also find two Thunderbolt/USB 4 ports on each model, with mid-range and top-tier options gaining two additional USB 3 (USB-C) ports. Prices start at £1,399.

iMac 24inch £1,399
(Entry level)

Display: 23.5in 4.5K Retina (4480x2520) with True Tone
Chip: Apple M1 with 8-core CPU (4 performance cores, 4 efficiency cores), 7-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 16GB)
Storage: 256GB (upgradeable to 512GB or 1TB)
Ports: 2x Thunderbolt/USB 4, 1x Gb Ethernet (option)

iMac 24inch £1,599
(Mid-range)

Display: 23.5in 4.5K Retina (4480x2520) with True Tone
Chip: Apple M1 with 8-core CPU (4 performance cores, 4 efficiency cores), 8-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 16GB)
Storage: 256GB (upgradeable to 512GB, 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 2x USB 3, 1x Gb Ethernet

iMac 24inch £1,799
(Ultimate)

Display: 23.5in 4.5K Retina (4480x2520) with True Tone
Chip: Apple M1 with 8-core CPU (4 performance cores, 4 efficiency cores), 8-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 16GB)
Storage: 512GB (upgradeable to 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 2x USB 3, 1x Gb Ethernet

Apple Magic Keyboard with Touch ID and Numeric Keypad

From £179

This extended keyboard is a great upgrade option for any Mac and comes with Touch ID for faster Mac logins. The black version costs £199.

Apple Magic Mouse

From £79

Design quirks aside, (we're looking at you, Lightning Port) the Magic Mouse is a great pointing device, thanks to its Multi Touch support. The black version costs £99.

Apple Magic Trackpad

From £129

This Multi Touch glass trackpad is a thing of beauty, giving you lots of control over macOS and it's rechargeable too. The black version costs £149.

Image credit: Apple Inc

EXPECTED JUNE 2024
UPDATED JUNE 2023

MacBook Air

From £999

Released in June 2023, the new 15-inch MacBook Air actually has a 15.3-inch Liquid Retina display. The laptop boasts a silent, fanless design, an all-new six-speaker sound system (the 13in has a four-speaker set-up), and immersive Spatial Audio. As per the 2022 Air update, the 15in model also comes with an M2 chip. The M2 features an 8-core CPU, offering 18% faster performance than the previous M1, along with a 10-core GPU, giving a 35% boost in graphics performance. The M2 also has up to 50% more memory bandwidth than the M1. Both M2 MacBook Air models come with 8GB of memory as standard, configurable to 16 or 24GB.

According to Apple, the new 15in Air is the thinnest 15in laptop available – 40% thinner than comparable PC laptops; it's just 11.5mm thin and weighs 1.51kg. The 13in Air is 11.3mm thin and weighs 1.24kg. The Liquid Retina display in the 15in MacBook Air has a resolution of 2880x1864 pixels, while the 13in has 2560x1664. Both support up to one billion colours.

Both the M2 MacBook Air models come with 1080p FaceTime HD cameras, MagSafe 3, two Thunderbolt/USB 4 ports and a headphone jack as well as Wi-Fi 6 and Bluetooth 5.0. You also get up to 18 hours of battery life when viewing video or 15 when web surfing.

Prices for the M2 13in Air start at £1,149, while the 15in model options start at £1,399. (The M1 MacBook Air is also still available from £999.)

MacBook Air £1,149
(Mid-range)

Display: 13.6in Liquid Retina with True Tone
Chip: Apple M2 with 8-core CPU (4 performance cores, 4 efficiency cores), 8-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 24GB)
Storage: 256GB (upgradeable to 512GB, 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 3.5mm headphone jack

MacBook Air £1,399
(Ultimate)

Display: 15.3in Liquid Retina with True Tone
Chip: Apple M2 with 8-core CPU (4 performance cores, 4 efficiency cores), 10-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 24GB)
Storage: 256GB (upgradeable to 512GB, 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 3.5mm headphone jack

EXPECTED JAN 2024
UPDATED JAN 2023

Mac mini

From £649

Apple's most affordable desktop may not come with a mouse, a trackpad or keyboard, but it's also great value starting at even less than the last model at £649.

Despite the reduction in price, the Mac mini now boasts Apple's M2 chip, boasting an 8-core CPU, 10-core GPU and 16-core Neural Engine. The 8GB of memory can now be boosted up to 24GB, while SSD storage options range from 256GB all the way up to 2TB. There is now also an M2 Pro version with a 10-core CPU/16-core GPU (configurable to 12-core CPU/19-core GPU), with 16 to 32GB memory and 512GB to 8TB SSD storage.

Entry-level and mid-range M2 Mac mini models continue to come with two Thunderbolt/USB 4 ports, but the M2 Pro model has now has four.

Mac mini £649
(Entry level)

Chip: Apple M2, 8-core CPU (4 performance cores, 4 efficiency cores), 10-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 24GB)
Storage: 256GB (upgradeable to 512GB, 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 2x USB-A, 1x HDMI 2.0, 3.5mm headphone jack, Gb Ethernet (10Gb Ethernet option)

Mac mini £1,399
(Ultimate)

Chip: Apple M2 Pro with 10-core CPU (4 performance cores, 4 efficiency cores), 16-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 16GB)
Storage: 512GB (upgradeable to 1TB or 2TB)
Ports: 4x Thunderbolt/USB 4, 2x USB-A, 1x HDMI 2.0, 3.5mm headphone jack, Gb Ethernet (10Gb Ethernet option)

TV 4K

From £149

Apple's third-gen little black box with A15 Bionic chip now adds HDR10+ to the mix. Prices now start at just £149 (Wi-Fi only); the standard version now comes with 64GB of storage, while paying £20 extra gets you 128GB and Ethernet support.

Apple HomePod/ HomePod mini

£99/£299

Apple's Siri-powered speakers sound great, you can link two for stereo sound, and use them as smart home hubs. The mini comes in five colours; the 2nd-gen Midnight/White HomePod (£299), offers higher spec and spatial audio.

Watch Series SE, 8 and Ultra

From £259

The 8 and SE are water resistant to 50m, but the new titanium Ultra is water resistant to 100m. The 8 and the Ultra boast an always-on display, and all three offer Emergency SOS and Crash Detection.

EXPECTED JAN 2024
UPDATED JAN 2023

MacBook Pro

› From £1,349

› While the MacBook Pro 13-inch got the M2 treatment back in June 2022, January 2023 sees the introduction of the M2 Max or M2 Pro in the 14in and 16in models. The new 14-inch M2 Pro model is available in a variety of CPU/GPU flavours – 10-core CPU/16-core GPU, 12-core CPU/19-core GPU, with 16 or 32GB memory options. Alternatively, if you step up to the M2 Max option, you can go for a 12-core CPU/30-core GPU or 12-core CPU/38-core GPU, with 32 or 64GB unified memory. All range from 512GB SSD storage to 8TB SSD storage. The 16in offers an M2 Pro 12-core CPU/19-core GPU, with 16 or 32GB memory. The M2 Max comes in either 12-core CPU/30-core GPU, with 32 or 64GB memory flavour or 12-core/28-core GPU, with 32 to 96GB memory. Again, all range from 512GB to 8TB SSD storage.

MacBook Pro 13in £1,349
(Entry level)

Display: 13.3in Retina (2560x1600) with True Tone
Chip: Apple M2 with 8-core CPU (4 performance cores, 4 efficiency cores), 10-core GPU, 16-core Neural Engine
Memory: 8GB (upgradeable to 24GB)
Storage: 256GB (upgradeable to 512GB, 1TB or 2TB)
Ports: 2x Thunderbolt/USB 4, 3.5mm headphone jack

MacBook Pro 14in £2,149
(Mid-range)

Display: 14.2in Liquid Retina (3024x1964) with True Tone
Chip: Apple M2 Pro with 10-core CPU (6 performance cores, 4 efficiency cores), 16-core GPU, 16-core Neural Engine
Memory: 16GB (upgradeable to 32GB)
Storage: 512GB (upgradeable to 1TB, 2TB, 4TB or 8TB)
Ports: 3x Thunderbolt/USB 4, HDMI port, SDXC card slot

MacBook Pro 16in £3,749
(Ultimate)

Display: 16.2in Liquid Retina (3456x2234) with True Tone
Chip: Apple M2 Max with 12-core CPU (8 performance cores, 4 efficiency cores), 38-core GPU, 16-core Neural Engine
Memory: 32GB (upgradeable to 96GB)
Storage: 1TB (upgradeable to 2TB, 4TB or 8TB)
Ports: 3x Thunderbolt/USB 4, HDMI port, SDXC card slot

Mac Studio

› From £2,099

EXPECTED JUNE 2024
UPDATED JUNE 2023

› The Mac Studio finally received a long-hoped-for update in June 2023 with the new model sporting Apple silicon M2 Max and M2 Ultra chips. The new Mac Studio is up to six times faster than the most powerful Intel-based 27-inch iMac and up to three times faster than the M1 Ultra Studio that preceded it.

The Studio's aluminium body is very compact for a desktop Mac, measuring 197x197x95mm, but it's what's inside that counts. The M2 Max chip has a 12-core CPU, a 30-core GPU (upgradeable to 38-core), and 32GB of memory (configurable to 96GB). The M2 Ultra comes with a 24-core CPU, 60-core GPU (upgradeable to 76-core), and 64GB of unified memory (upgradeable to 192GB). Storage options on both scale up to 8TB.

The Mac Studio is Apple's most powerful desktop Mac to date – it's pricy though.

The Mac Studio M2 Max starts at £2,099, and the M2 Ultra starts at £4,199, so these machines are not for everyone. But both offer an incredible array of connectivity options and support for the more pro user.

Mac Studio £2,099
(Entry level)

Chip: M2 Max with 12-core CPU (8 performance cores, 4 efficiency cores), 30-core GPU, 16-core Neural Engine
Memory: 32GB (upgradeable to 96GB)
Storage: 512GB (upgradeable to 1TB, 2TB, 4TB, 8TB)
Ports: 4x Thunderbolt 4, 2x USB-C, 2x USB-A, HDMI 2.0, 3.5mm headphone jack, 10Gb Ethernet, SDXC card slot

Mac Studio £4,199
(Ultimate)

Chip: M2 Ultra with 24-core CPU (16 performance cores, 8 efficiency cores), 60-core GPU, 32-core Neural Engine
Memory: 64GB (upgradeable to 192GB)
Storage: 1TB (upgradeable to 2TB, 4TB, 8TB)
Ports: 4x Thunderbolt 4, 2x USB-C, 2x USB-A, HDMI 2.0, 3.5mm headphone jack, 10Gb Ethernet, SDXC card slot

Studio Display

› From £1,499

› Launched alongside the Mac Studio in March 2022, the Studio Display is a great addition to any Mac setup.

Powered by Apple's A13 Bionic and running iOS, it features a 27-inch Retina display with 5K resolution (5120x2880 pixels) and True Tone, a 12MP Ultra Wide camera with Centre Stage, and a six-speaker sound system with support for Spatial Audio. A range of stand options are available, and you can choose nano-texture glass for £250 more.

› Image credit: Apple Inc

iPad/mini

› iPad (10th gen) From £499
› iPad mini From £569

› **Apple celebrates the iPad's 10th incarnation by increasing the display to 10.9in and boosting its internals to an A14 Bionic chip.** You now get an Ultra Wide 12MP front and updated 12MP back camera. The iPad now also finally adopts the USB-C port, and comes in Blue, Pink, Yellow and Silver. Prices start at £499.

The iPad mini is like a shrunk down iPad Air, with an all-screen design centred around its 8.3in Liquid Retina display. The £569 version comes with 64GB of storage (but can be upgraded to 256GB), comes with a 12MP Wide camera, second-gen Apple Pencil support and USB-C charging.

iPad Air

› From £669

› **Like the iPad, iPad mini and iPad Pro, the iPad Air has an all-screen design that makes the most of its 10.9in Liquid Retina display.** Inside its super-slim chassis, you'll find the same Apple silicon M1 chip as the entry-level MacBook Air and Mac mini. Plus it's available in a choice of storage options (64GB or 256GB), has 802.11ax Wi-Fi (aka Wi-Fi 6) and Bluetooth 5.0 onboard, and there are Wi-Fi+Cellular variants with 5G starting at £719.

The iPad Air also supports Apple's second-gen Apple Pencil and can be teamed with Apple's Magic Keyboard for powerhouse productivity on the go. Augmented reality fans will love its LiDAR-equipped 12MP Wide camera, plus it also has Centre Stage.

iPad Pro

› From £899

› **Apple's priciest iPad is also its most fully featured.** Available in 11in and 12.9in sizes, the iPad Pro models now boast M2 Apple silicon, which turbocharges the performance, and iPadOS 16 enables the new Apple Pencil 'hover experience'.

The 12.9in model's Liquid Retina XDR display boasts miniLED backlighting, but even the 11in model gets 120Hz ProMotion refresh rates, plus a Thunderbolt/USB 4 port for charging and connection to a wide range of external devices. And both support the second-gen Apple Pencil, Magic Keyboard, and Centre Stage. The 12.9in now makes an even greater MacBook replacement.

iPad

Display: 10.9in
Chip: A14 Bionic
Storage: 64GB, 256GB
Ports: USB-C
Unlocking: Touch ID

iPad mini

Display: 8.3in
Chip: A15 Bionic
Storage: 64GB, 256GB
Ports: USB-C
Unlocking: Touch ID

iPad Air

Display: 10.9in
Chip: Apple M1
Storage: 64GB, 256GB
Ports: USB-C
Unlocking: Touch ID

iPad Pro

Display: 11in or 12.9in
Chip: Apple M2
Storage: 128GB-2TB
Ports: Thunderbolt 4
Unlocking: Face ID

Apple Smart Folio

› From £69

› Available in a range of stylish colours, these wrap-around magnetic cases will keep your iPad mini, iPad Air and iPad Pro looking good for years, and they double as handy stands.

Apple Pencil

› From £89

› Available in first-gen and second-gen variants, the Pencil brings pinpoint accuracy to your iPad interactions, making it great for sketching, painting and creating handwritten notes. And lots more besides.

Apple Magic Keyboard/Folio

› From £279

› The Magic Keyboard (for iPad Air/iPad Pro), comes with backlit keys and easy-to-use trackpad. There's now also a Magic Keyboard Folio for iPads.

iPhone SE

› From £449

› Apple's most affordable iPhone is now even better value, thanks to a March 2022 update that saw it receive the same A15 Bionic chip as the rest of the iPhone line-up and gain 5G to boot. Old-school design aside, the iPhone SE has most of the things people love about iPhone, from iOS's phenomenal ease of use to a 12MP Wide main camera with 4K recording – perfect for shooting photos and videos.

Battery life is decent too with the iPhone SE lasting for up to 15 hours between recharges (with Qi wireless charging onboard too). The main thing the iPhone SE misses out on is Face ID unlocking, making do with Touch ID on the Home button instead.

iPhone 14/ Plus

› iPhone 14 From £849
› iPhone 14 Plus From £949

› The iPhone 14 retains the 6.1in screen of the 13, although the mini has been discontinued, and there's a 14 Plus with a 6.7in screen.

The two handsets retain the A15 Bionic chip, and the Main, Ultra Wide TrueDepth cameras are still 12MP but the phones now boast a Photonic Engine for better low-light images.

The iPhone 14 lasts up to 20 hours for video playback; the Plus up to 26 hours. All four handsets feature Emergency SOS and Crash Detection – Apple's latest ways of establishing an accident and contacting the emergency services.

iPhone 14 Pro/Pro Max

› iPhone 14 Pro From £1,099
› iPhone 14 Pro Max From £1,199

› The iPhone 14 Pro and Pro Max come with the Dynamic Island, an interactive area around the new TrueDepth camera, that integrates alerts, activities, and notifications.

The Pro 14 and Pro Max are powered by a new A16 Bionic chip, and despite now offering an always-on display, the 14 Pro can last up to 23 hours for video playback, while the 14 Pro Max can keep going for up to 29 hours. Photography gets an upgrade too, as a new quad-pixel sensor on the Main camera provides 48MP quality at 12MP optimisation.

iPhone SE

Display: 4.7in
Chip: A15 Bionic
Storage: 64GB-256GB
Connectivity: 5G, Wi-Fi
Unlocking: Touch ID

iPhone 14

Display: 6.1in
Chip: A15 Bionic
Storage: 128GB-512GB
Connectivity: 5G, Wi-Fi
Unlocking: Face ID

iPhone 14 Plus

Display: 6.7in
Chip: A15 Bionic
Storage: 128GB-512GB
Connectivity: 5G, Wi-Fi
Unlocking: Face ID

iPhone 14 Pro

Display: 6.1in
Chip: A16 Bionic
Storage: 128GB-1TB
Connectivity: 5G, Wi-Fi
Unlocking: Face ID

iPhone 14 Pro Max

Display: 6.7in
Chip: A16 Bionic
Storage: 128GB-1TB
Connectivity: 5G, Wi-Fi
Unlocking: Face ID

Apple AirTag

› £35

› Ideal for keeping track of keys, bags and other easily mislaid items, AirTag hooks into Apple's Find My network, with precision finding on the iPhone 11 or later, thanks to their built-in U1 chip.

Apple AirPods/ AirPods Pro 2

› From £179

› Third-gen AirPods and second-gen AirPods Pro boast Spatial Audio with dynamic head tracking. The Pro also support ANC and Adaptive Transparency.

Apple AirPods Max

› £549

› These premium headphones aren't for everyone – especially at that eye-watering price tag. They are supremely comfortable and great-sounding though.

› Image credit: Apple Inc

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One more thing
Vision Pro

Graham Barlow is happy to see Apple innovating again

$3,499 for a Vision Pro? I'll take two, and one for my butler, please.

And just like that, Apple is back! With a classic "One more thing" from Tim Cook at WWDC 2023, Apple is once again revolutionising personal computing. The Vision Pro has reignited the buzz about Apple that had died off of late. Not that it ever went anywhere really, but once Vision Pro was announced the Apple share price instantly jumped $3 (before settling back down a few days later) and the media couldn't stop shouting about it.

Clever Apple

You can tell that the Vision Pro has been a long time in development simply by looking at how well it's made and what it can do. It has emerged showing the sort of finesse and quality that you'd usually associate with the third version of a product. It does look absolutely amazing, and I can't wait to try one. It's like Apple launched the iPhone starting with the 3GS model instead of the original. But that comes at a price, and in this case that price is $3,499, which means I'm not going to be buying one of these on a whim.

Perhaps Apple is being clever here. By making the Vision Pro unaffordable for most people it can keep production runs low, so it can keep up with demand, while also stuffing it with more tech than a consumer version of the product actually needs so it can see what works. Do you really need creepy digital versions of your eyes staring out of the headset so people know you're looking at them? It's debatable. If you took a lot of these possibly gimmicky features out you could easily make a much cheaper Vision without the 'Pro' in the name. Now Apple gets to test the product out in the real world on those early adopters for a bit longer before it goes mainstream. It gets to see how people actually use it and which features they really want before it releases a cheaper consumer version in a year's time.

Now the headset is finally here, I'm wondering which of those other long-rumoured Apple products Tim Cook will one day announce. I'm tempted to believe that the Apple Car will definitely materialise at some point now. That's going to be equally amazing, and if it's self-driving then you can probably wear a Vision Pro while you're in the driver's seat and use a virtual steering wheel!

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